VOL. LXXXII PART SIX

JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

JUNE 1957

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our gardening expert

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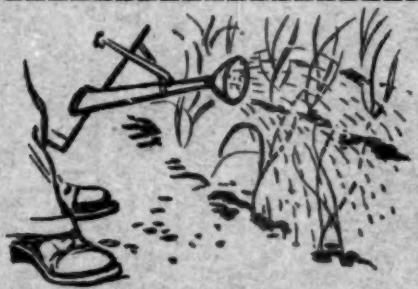

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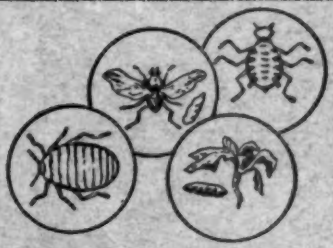

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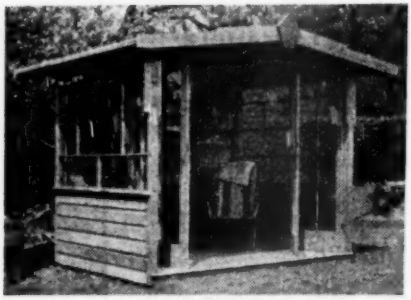

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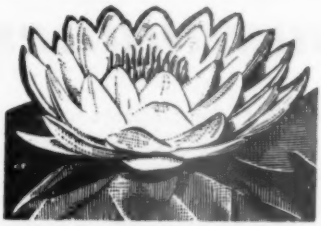

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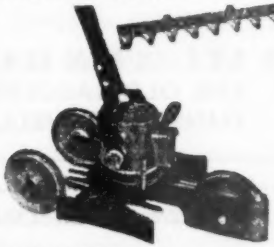

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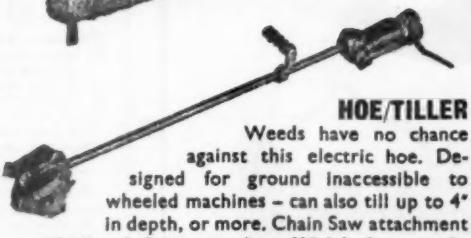

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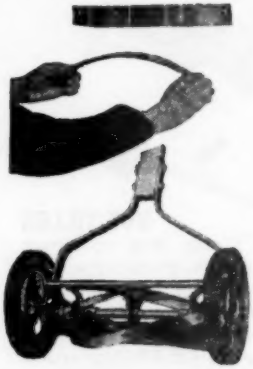

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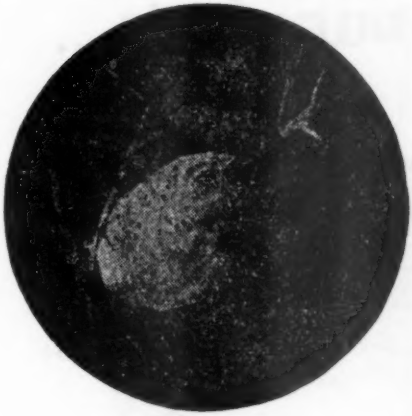

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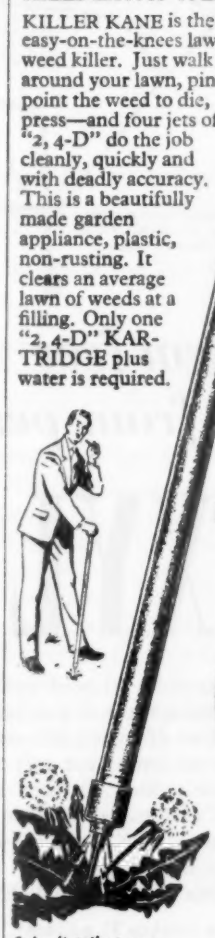

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JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

VOL. LXXXII PART SIX

June 1957

THE SECRETARY'S PAGE

ANNOUNCEMENTS—JUNE AND JULY

Shows

TUESDAY, June 4 12 NOON to 6 P.M. WEDNESDAY, June 5 10 A.M. to 5 P.M.	Fortnightly Flower Show, Cactus and Succulent Society's Competition and Geranium Society's Competition, in the New Hall. British Iris Society's Show, in the Old Hall.
TUESDAY, June 18 12 NOON to 6 P.M. WEDNESDAY, June 19 10 A.M. to 5 P.M.	Fortnightly Flower Show, Flowering Tree and Shrub Competition, Cactus and Succulent Competition for Amateurs (Sherman Hoyt Trophy) and British National Carnation Society's Competition, in the New Hall.
TUESDAY, June 25 12 NOON to 7 P.M.	National Sweet Pea Society's Show, in the New Hall.
FRIDAY, June 28 11 A.M. to 7 P.M. SATURDAY, June 29 10 A.M. to 5 P.M.	National Rose Society's Show. (Both Halls on June 28, New Hall only on June 29.)
TUESDAY, July 2 12 NOON to 6 P.M. WEDNESDAY, July 3 10 A.M. to 5 P.M.	Fortnightly Flower Show, in the New Hall. British Delphinium Society's Show, in the Old Hall.

Shows—*continued*

TUESDAY, July 16 12.30 P.M. to 6 P.M. WEDNESDAY, July 17 10 A.M. to 5 P.M.	Fortnightly Flower Show and Fruit and Vegetable Competition, in the New Hall.
TUESDAY, July 16 12 NOON to 7 P.M. WEDNESDAY, July 17 10 A.M. to 5 P.M.	British National Carnation Society's Show, in the Old Hall.
TUESDAY, July 30 12 NOON to 6 P.M. WEDNESDAY, July 31 10 A.M. to 5 P.M.	Fortnightly Flower Show and British Fuchsia Society's Competition, in the New Hall.

Lectures

TUESDAY, June 4, at 3 P.M. "Irises for every Garden", by MR. H. J. RANDALL, C.B.E.

TUESDAY, June 18, at 3 P.M. "Gardening on Chalk", by SIR FREDERICK STERN, O.B.E., M.C., F.L.S., V.M.H.

TUESDAY, July 2, at 3 P.M. "The Modern Delphinium", by MR. R. C. PARRETT.

TUESDAY, July 16, at 3 P.M. "Apple Scars and Blemishes", by PROF. H. W. MILES, M.SC., D.SC.

TUESDAY, July 30, at 3 P.M. "Mist Technique Propagation", by MR. F. P. KNIGHT, F.L.S. and MR. F. E. W. HANGER, V.M.H.

Demonstrations at Wisley—The following demonstrations will be given at Wisley, that on the succeeding day or days being in each case a repetition of that given on the first.

JULY 3–4. Summer Pruning of Fruit Trees. (Commencing at 2 P.M.)

JULY 17–18–19. Vegetative Propagation of Shrubs and Herbaceous Plants. (Commencing at 2 P.M.)

Lily Group Meetings—The Lily Group will hold its second meeting of the year in the Restaurant of the Old Hall at 4.30 P.M. on Tuesday, June 18, when there will be a discussion on "The Genus Erythronium". There will be a Co-operative Display of lilies at the Fortnightly Show on July 16 and 17, as no competitions for lilies are being held in 1957. Members of the Lily Group are invited to bring or send lilies for this Co-operative Display. SIR FREDERICK STERN, the Chairman of the Group, has kindly undertaken to supervise the staging of this display. Any Member who would like to supply flowers for this exhibit is asked to let the Secretary of the Lily Group know, on or before the preceding Wednesday, the names of the lilies he proposes to

supply and the number of stems, so that the necessary arrangements in regard to space, etc., may be made and cards prepared showing the names of the lilies and the names of the exhibitors.

There will be a discussion at 4.30 P.M. on Tuesday, July 16, in the Restaurant of the Old Hall, on "The Lilies Exhibited".

At 7 P.M. on the same day, Members of the Lily Group and their friends will dine together in the Restaurant of the New Hall.

Floral Arrangement Competition—There will be a Floral Arrangement Competition on Wednesday, October 2. For Schedules application should be made to the Secretary.

Gardeners' Sunday—A scheme was inaugurated last year which it is hoped will make a special appeal to Fellows of The Royal Horticultural Society. The plan is to have each year one particular day on which gardens throughout the country will be opened to the public in aid of the two gardening charities. The day selected is the last Sunday in June each year, and it is already becoming widely known as "Gardeners' Sunday".

The two gardening charities are the Gardeners' Royal Benevolent Institution which looks after aged gardeners and their widows, and the Royal Gardeners' Orphan Fund which cares for gardeners' orphans. The scheme is organized by a joint committee of the two organizations.

"Gardeners' Sunday" has the sympathy of the Committee of the National Gardens Scheme of the Queen's Institute of District Nursing as it is appreciated that the National Gardens Scheme owes much of its success to the goodwill and co-operation of gardeners.

Fellows who are prepared to open their gardens on "Gardeners' Sunday"—the last Sunday in June—are invited to communicate with the Secretary, "Gardeners' Sunday", 92 Victoria Street, London, S.W.1. It is also hoped that many Fellows and their friends will support the gardening charities by making a point of visiting gardens which are opened under the scheme. A booklet giving particulars of such gardens may be obtained from the above-mentioned address, price 6*d*., by post 8*d*.

Flower Fair—Flower Arrangements will be a feature of a Flower Fair and Garden Party in aid of the Marie Curie Memorial Foundation, which will be held at Marlborough House on July 10 and 11, by the gracious permission of HER MAJESTY THE QUEEN. Particulars may be obtained from The Organizer, 38 Chester Square, London, S.W.1.

Publications—*Index to the Journal and List of Awards*, 1946–1955: This volume, bound in blue buckram, is now ready price 30*s*. postage and packing 1*s*. It is a consolidated Index for the ten years and follows the same style as the two previous Indices to the JOURNAL. *The Rhododendron Handbook*, Part II: This part deals with rhododendron hybrids and has been extensively revised since the previous edition. It contains the Rhododendron Stud Book, the list of hybrid rhododendrons usually available and lists of deciduous, Japanese and evergreen azaleas. Part I,

which was published recently, deals with species. Price 12*s*. 6*d*. each part, postage and packing 1*s*.

Pamphlets. MR. S. A. PEARCE of the Royal Botanic Gardens, Kew, has revised the late MR. J. COUTTS'S pamphlet on *Hedges and Screens* and this will be available early in June, price 1*s*. 3*d*., postage and packing 3*d*. A revised edition of *Pruning Hardy Shrubs*, by A. OSBORN, is also available price 1*s*. 3*d*., postage and packing 3*d*. MR. LANNING ROPER'S article on *Decorative Autumn Fruits and Berries* has been reprinted as a pamphlet and is now available, price 1*s*., postage 3*d*. These publications may all be obtained from The Secretary, The Royal Horticultural Society, Vincent Square, London, S.W.1.

NOTES FROM WISLEY

J. B. Paton

THROUGHOUT the summer a constant procession of visitors is to be seen inspecting the collection of roses on Weather Hill, for without doubt the rose is one of the most popular flowers in gardens at the present moment. The collection at Wisley contains many of the well-known old varieties as well as some of the latest introductions, thus it provides a site on which the behaviour of the old with the new may be compared on a soil which is far from ideal in so far as the cultivation of roses is concerned. The pruning, usually carried out in late March, is generally not very severe as the aim is to produce as many flowers as possible rather than a few blooms of exhibition quality. After pruning, the rose borders are dug over and an application of fertilizer is made, the exact nature of which varies from year to year. The usual choice is bone meal alternating year by year with a general fertilizer at the rate of 3–4 ounces per square yard. In late April a surface mulch of well-rotted farmyard manure mixed with compost is applied. Some people complain of the stench emitted by the mulch, but the odours soon evaporate and leave behind the strawy material to prevent the sun scorching the roots. This mulch also assists to reduce the spread of Black Spot disease which has been controlled in the past by the application, as a spray, of colloidal copper, but the new fungicide Captan has given good results in the past season.

At the top of the border, growing in the shade of fastigiate beeches, are some plants of the old favourite, 'Zephirine Drouhin', a derivative of *Rosa bourboniana*, with scented cerise-pink flowers carried on long, arching, thornless stems. By its side is another vigorous grower, 'Frau Carl Druschki', which is a scentless white hybrid perpetual. The branches of this variety are pegged down; that is, they are left 5–6 feet long and tied in a horizontal position at a height of 2½–3 feet from the ground. Of the hybrid tea roses, 'Virgo' with thick white petals forming a tightly

coiled bud is a fairly recent introduction, while the older 'McGredy's Ivory' has its white buds tinged with cream.

In the yellow hues, 'Lady Forteviot' is a good "doer" which will succeed on most soils, as will 'McGredy's Ivory', often seen at its best in the autumn. With a profusion of flowers throughout the season, 'Golden Dawn' has sunflower-yellow rose-pink tinged buds which on opening reveal sunflower-yellow petals which age to lemon yellow. The newer 'Spek's Yellow' has a rather thin flower, of clear yellow, carried on an upright stem. Among the new two-colour roses with bizarre effect noted last year were 'Sultane' with vermilion interior and golden exterior and 'Doctor Valois', a geranium-lake with golden-yellow reverse. The well known 'Peace' was the forerunner of a new race with great substance in the flower and vigour in the bush. Its pale golden-yellow flowers are flushed with rose-pink and may be compared with 'Grandmère Jenny' which, however, is slightly darker. Both are scented and free flowering.

Of the true pinks 'Madame Butterfly' still has no rival both for form and for scent. Other pink ones noted include the scented free-flowering 'Lady Sylvia', the bright cerise-pink 'Shot Silk', and 'Ophelia', a salmon-pink of perfect shape. This last one is also popular as a forcing variety for market.

The developments in the red rose since the end of the war have been truly remarkable. Although 'Etoile de Hollande' is still grown it has many rivals as far as colour is concerned. First in the field was 'Ena Harkness' with rich crimson-scarlet perfectly shaped flowers on upright stems. This was followed by such varieties as the brilliant cinnabaric 'Independence', which appears to be particularly free from disease, and the geranium-red 'Radar', which has a finely pointed perfumed flower. In a shade of carmine 'Symphonie' is a rose with quality in the flower and sufficient strength in the plant to make a good variety for bedding. Not so robust is 'Prelude' with an unusual colour of lavender-mauve which is well set off by the pale green foliage. The delightfully scented flowers are held on erect stems.

The floribunda roses are well represented in the border and once again the older varieties may be seen side by side with the novelties. 'Frensham' is possibly the most free-flowering, being in bloom from June to October. The double crimson-scarlet flowers are carried on stems up to 5 feet in height. The glossy green foliage appears reasonably resistant to mildew. Of a more dazzling scarlet colour 'Cocorico' has attracted much attention while the dwarf-growing 'Red Favourite' is a dark velvety red variety to be specially commended on account of its trouble-free growth. 'Tantau's Delight' is a bright scarlet polyantha rose. Of older origin the deep red scented 'Dusky Maiden' blooms freely as does its pale pink companion 'Dainty Maid'. With enormous trusses of pale yellow blossoms 'Yellow Holstein' is a cultivar which will, no doubt, be widely planted in future. Of the dwarf polyanthas one which caught the eye last year was 'Baby Betty' with yellow buds which open to reveal delicate pink petals.

As well as the collection of hybrid teas and floribunda roses there is also a selection of the old-fashioned species and shrub roses to be seen at Wisley. Many of them are planted in borders situated to the south of the Frameyard Wall, while others are to be seen in various parts of the Gardens. These roses will survive with considerably less attention than the hybrid teas, although of course they benefit from an application of a mulch and the removal of old, worn-out branches. Fellows may note many of these roses at their best in June although some of them, such as the musk roses, flower freely throughout the summer.

PLANTS OF INTEREST AT WISLEY DURING JUNE

LABORATORY WALLS
Abelia schumannii
Jasminum × *stephanense*
Senecio laxifolius

WILD GARDEN
Kalmia latifolia
Lilium rubellum
Magnolias in variety
Meconopsis species
Primulas in variety
Rhododendrons in variety
Stewartia species
Styrax japonica

SEVEN ACRES
Colutea arborescens
Crataegus orientalis
Deutzias in variety
Hemerocallises in variety
Iris sibirica
Kolkwitzia amabilis
Neillia thibetica
Philadelphuses in variety
Spiraeas in variety

WEATHER HILL
Buddleia alternifolia
Cytisus battandieri
Roses

VEGETABLE TRIAL GROUNDS
Trial of Carrots under Dutch lights
" " Sweet Peas

ROCK GARDEN AND ALPINE HOUSE
Allium moly
Antennaria dioica

ROCK GARDEN AND ALPINE HOUSE—*cont.*
Aquilegia glandulosa
Campanulas in variety
Cistuses in variety
Coronilla cappadocica
Dianthus species
Erinus alpinus
Helianthemums in variety
Incarvillea delavayi
Leontopodium alpinum
Mertensia sibirica
Ourisia macrophylla
Phloxes in variety
Phyteuma sieberi
Roscoea humeana
Saxifrages in variety
Thymus serpyllum

FLORAL TRIAL GROUNDS
Trial of Delphiniums
" " Paeonies
" " Perennial Lupins
" " Pyrethrums
" " Sweet Peas

HERBACEOUS BORDERS
Anchusa caespitosa
Clematis recta
Delphiniums in variety
Dicentra eximia
Geranium pratense
Lychnis chalcedonica
Rhazya orientalis
Salvia haematodes
Veronicas in variety

AWARD OF GARDEN MERIT COLLECTION

Baptisia australis
Campanula garganica
Dictamnus albus
Geranium dalmaticum
Magnolia sieboldii
Rosa moyesii

BATTLESTON HILL

Abutilon vitifolium
Hostas in variety
Lilies in variety
Magnolias in variety
Meconopsis species
Primulas in variety
Rhododendrons in variety

SOME IMPRESSIONS OF THE WESTERN STATES OF THE U.S.A.

E. H. M. Cox and P. A. Cox

SOME DESERT PLANTS* OF SOUTHERN ARIZONA

IT has been our good fortune to have been able to combine business with pleasure twice in the past three and a half years and see something of the gardens and a little of the native flora of the western states of Washington, Oregon, California and Arizona. The first time, in October and November 1954, we began in the north and ended in Arizona; the second, during May and June 1956, we reversed the route, beginning in Arizona and ending in Washington. It is difficult to deal separately with the same scene at different times of the year, and so we shall start with Arizona.

Botanically this south-western state must be one of the most interesting in the whole country, for it contains alpine country and pine forests at more than 8,000 feet, as well as desert below sea-level. Much of it is what is loosely termed desert, land with a very low rainfall and no permanent water except a few large rivers, such as the Colorado and the Gila. And yet it is by no means the same as what is called desert in Arabia or the Sahara. There may be any amount of gravel and stone about, but there is also soil that will grow almost anything if water is available. We have travelled hundreds of miles in the southern part of the state, and the only place where we saw real sand dunes was in the extreme south-west corner near Yuma, almost on the Mexican border.

The part of the desert which we visited lies between Phoenix and Tucson towards the south of the state, about seventy miles north of

* The names of these desert plants seem to change even oftener than in other parts of the world, and this applies particularly to the Cacti. All names are taken from the standard flora of the state, *Flowering Plants and Ferns of Arizona*, by Kearney and Peebles, United States Government Printing Office, Washington, 1942.

Mexico. With the exception of one big river, the Gila, there is no permanent water. Nor in that part is there sufficient water to spare for irrigating more than a small percentage of the available land. Where they can irrigate, the land is extremely rich. Possibly the finest cotton in the world is grown within a few miles of Phoenix. The rainfall may reach 6 or 7 inches a year or 12 inches in the hills, most of it in flash floods caused by thunderstorms. Every few hundred yards one comes across dry and shallow scoured channels, down which flood water will pour for an hour or two to be soaked up and disappear underground.

This is a land of the grotesque, of the Roadrunner, a species of Ground Cuckoo that streaks along the ground faster than any bird I have seen which is smaller than an Ostrich, of the Gila monster, an exceedingly ugly and poisonous lizard, of snakes galore, and above all of the Cactus family, from little tots an inch in diameter to *Cereus giganteus*, the largest of the family, 40 feet high and more. After a few showers the desert is covered for a week or two with annuals, but for most of the year the undergrowth is of little interest, consisting of various drought-resisting plants, such as the Creosote bush, ***Larrea tridentata***, the commonest of desert plants, the Skeleton-weed, *Eriogonum deflexum*, and one of the Bur-sages, *Franseria deltoidea*. Ironwood, *Olneya tesota*, is another common plant, rarely more than a large bush nowadays, although it used to be plentiful as a small tree. The wood burns exactly like coal and near any settlement or town all the larger plants have been cut down as firewood. It is a pity, as the purple-and-white flowers are quite attractive, like a pea carried in short racemes.

Apart from one or two plants which we shall mention later it is the cacti which are the main interest to the stranger. The most striking is certainly the Sahuaro, *Cereus giganteus*, the state flower of Arizona. There are actually two of these giant cacti, the Sahuaro and the Organ Pipe cactus, *Cereus thurberi*. The latter grows farther to the south-west, near the Mexican border and the Gulf of California. The main difference is that the Sahuaro has a main stem which branches some way up the trunk (Fig. 76), while the Organ Pipe Cactus, although it sometimes produces a secondary branch near the top, grows multiple stems from the base. They are both nocturnal in that the flowers open about midnight and are withered by noon next day. The flowering period is the first half of May in most areas. In the Sahuaro the flowers are pure white with a golden centre, 3 to 4 inches across, with the odour of a ripe melon (Fig. 76). In the Organ Pipe they are pink in the centre and almost white on the margin.

You will note that there are branches in the Sahuaro of various sizes. There has been considerable discussion among local botanists about the age at which it begins to branch. The latest theory is that they do not begin to throw out a branch until they are a hundred years old. It is almost certain that many of the large plants are more than two hundred years old. Most of the older plants have holes neatly scooped out near the top. These are made by woodpeckers. Lovers of these strange

plants are becoming worried at the absence of seedlings. The area in which we stayed, near Florence and Coolidge, is one of the main centres of the species. It is certainly true that although we walked for miles and saw what must have been thousands of plants, we never saw one under about 5 feet in height.

Various species of Barrel Cactus, *Echinocactus*, are common, both large and small. *E. wislizeni* is found up to 11 feet, but the usual size of mature plants seems to be about 2 to 3 feet. In the part of the desert that we were in they were by no means a dominant plant. Some of the commonest were several species of *Opuntia*, which are locally called Chollas. There are two of these formidable plants, very different from our usual conception of the prickly pear, also to be found there, and these two command great respect. They are *Opuntia arbuscula*, the Pencil Cholla, and in particular, the Jumping Cholla, *O. bigelovii*. The respect is caused by the fact that the stems are closely jointed, the joints are very easily detached and the spines are barbed. These joints are very light and blow across the desert floor with a puff of wind. Also the spines are quite strong enough to penetrate the sole of a stout sandshoe. As there are always spines pointing upwards whichever way the Cholla joint is lying, it is no wonder that they are pestilential plants. Even in flower they are not attractive. The flowers of *O. bigelovii* are greeny-yellow with the outer segments tinged with pink (Fig. 76).

Another common plant, not this time a cactus, is *Fouquiera splendens*, a plant related to the tamarisk. This is called Ocatillo. It has straight thorny stems, and for much of the year is leafless. After rain it sends out its green leaves, but these soon wilt, which does not seem to bother the plant at all. In May it produces its really lovely pillar-box red flowers carried in terminal panicles on its leafless stems. So useful is it that in some areas it is used as a hedge against cattle.

Not so common and apparently confined to certain soils is the giant among yuccas, *Yucca elata*. Their flowers were almost over when we were there in May, but sufficient of the flower spike was left to show what a colossal affair it was, well over 6 feet in height, while the total height of these large plants is more than 20 feet (Fig. 76). Higher up among the foothills the shorter and more attractive *Y. arizonica* is a dominant plant.

But by far the most attractive of all desert plants is the Paloverde. When in full flower we considered it to be one of the finest shrubs that we had ever seen. There are two closely related species, *Cercidium microphyllum*, the Yellow Paloverde, with bright green bark, and the Blue Paloverde, *C. floridum* with blue-green bark. The former has pale yellow flowers, the latter a deeper golden yellow. Like most of these desert plants the leaves only last for a few weeks after rain. In this case that makes no difference, as it would be quite impossible to see a leaf, so freely does the plant flower. The branches are graceful and arching with the result that the whole plant is a waterfall of pale gold during May. One of the joys is that the plant always appears to be solitary; thus they can always be seen at their best against a brilliant blue sky with the

general brown and tawny tones of the desert as a foreground. It is certainly the most beautiful leguminous plant that we have ever seen.

One of the highlights of our stay in the desert on both occasions was a trip to the Boyce Thomson botanic garden near Superior. This lies in the foothills of the Rockies about fifty miles east of Phoenix. The country round is the most arid of mountain country, dry and sere with a huge copper mine at nearby Superior. There is this one gash in the hills with springs and water. The result is fascinating not only as a collection of native plants, but also as a testing ground for eucalypts for almost the whole of western states.

THE PACIFIC COAST

Our next port of call was more sophisticated, Santa Barbara, a residential town on the coast about forty miles north of Los Angeles. Owing to the close proximity of the mountains there is little or no chance of industrial development, and it is still an area of large gardens, like Burlingame just south of San Francisco. But even the great wealth of California cannot stop the gradual break-up of large gardens, partly because of the universal increase in cost, and partly because of the very real shortage of trained gardeners. In all the gardens I have visited in the eastern and western states during four visits since the war I could count on the fingers of one hand the number of skilled plantsmen I have met among professional gardeners. As in this country this increases the skill and knowhow of the garden owner, but it also reduces the size of the gardens.

Another reason for the reduction of size south of San Francisco is the danger of a permanent water shortage. In an area such as Santa Barbara, with a lovely climate, irrigation has to go on full bore on about 325 days out of 365. Every garden has an underground system and taps every few yards. In San Francisco at the famous Golden Gate Park they have a permanent watering staff of five, and further south, away from the Bay fogs, irrigation is even more necessary.

On both occasions in Santa Barbara we were lucky enough to stay with an old friend at Las Tejas, one of the last of the great gardens. This had been made by MRS. OAKLEIGH THORNE, a very skilful garden architect with a very wealthy husband. In many of these older formal gardens the use of evergreens is everywhere apparent. Hedges are commonly made of such plants as *Feijoa sellowiana* and various species of eugenia. An odd fact is the popularity of ivy and box with so much that is semi-tropical that could be used (Fig. 79). In the older houses there are usually one or two specimen trees. Colour in the average garden is largely made up, as far as we could see, of a small selection of standard plants. Geraniums of all kinds are to be seen everywhere, and so are mesembryanthemums and other succulents. Camellias are often seen, but we would not call them an entire success. The climate is too hot for them; and rhododendrons hardly exist.

One of the most interesting places in Santa Barbara was the Botanic Garden, some way above sea level up a canyon. It starts with the excellent idea of only showing native Californian plants. Their collection of ceanothus, arctostaphylos and other shrubs only proves what a marvellous flora California possesses (Fig. 77). Unfortunately, in the spring, we were there on one of the very few rainy days and photography was impossible. The present director, MRS. KATHERINE MUELLER, is certainly making this one of the most fascinating small botanic gardens that we have ever seen.

Private gardens large and small in Santa Barbara are freely open to visitors and tours are arranged at regular short intervals. This is an arrangement made by the garden owners themselves under a committee headed by MISS PEARL CHASE.

In San Francisco our time was taken up in seeing Golden Gate Park, a quick run through the redwoods, and a short botanizing expedition up Mount Tamalpais, that interesting mountain just to the north of San Francisco beyond the Golden Gate Bridge. Golden Gate Park for years has filled me with delight. They are among the lucky ones with their mild climate and their Bay fogs during the growing season. One of the joys is their use of their lovely native *Pinus radiata* in long winding avenues, surely the most handsome pine of all when seen in such glory. And there are always rare and lovely plants to be seen, and the speed of growth is phenomenal under their conditions. MR. WALTHER took us round their fine collection of forms of *Magnolia campbellii*, some of which have flowered in twelve to fifteen years from seed with growth of up to 3 feet in a year.

The redwoods, *Sequoia sempervirens*, as always fascinated, but they are not joyful plants. Their straightness and stateliness is almost too solemn, and so dense is their shade that nothing will grow underneath.

Mount Tamalpais has a most varied flora, a grove of redwoods at the base, a chaparral or scrub of at least three species of ceanothus, an equal number or more of arctostaphylos, *Rhododendron occidentale*, oenotheras, several species of lupin, and so on, with springs and bog, dry ground and rocks. We know of no other such interesting botanical ground within half an hour of the centre of a big city.

On our way north we spent two days in the Siskiyous. This range lies on the Californian–Oregon border and is possibly known to most of us as the home of a number of well-known rock-garden plants. It starts just north of Mount Shasta and covers an area of about fifty miles by twenty. It is the last place one would imagine as a home of good plants, ridge after ridge of saddlebacks, all very uninteresting to look at. The average height is about 5,000–6,000 feet, and at one time these ridges had been wooded right to the top, but logging has been going on for many years, and much of it consists of broken stumps, secondary growth and rags too poor for logging.

Our guide was M. LE PINIEC, a nurseryman who retired during the war years and knew every hole and corner. In spite of the sameness of

the hills we spent a most interesting day. At one place the entire top of a hill had slid slowly down to the bottom of the valley and there in a flat scree were many of the local mountain plants growing as if they had never left their tops, *Silene hookeri*, *Iris bracteata*, *Lewisia oppositifolia*, *Phlox longifolia*, several calochortus, *Allium falcifolium*, *Viola douglasii*, *V. hallii* and many others. The most charming plant was a microform of *Ceanothus pumilus* with leaves as small as the smallest thyme. This hugged the ground in neat, compact mats.

During the whole trip we were most impressed by the ceanothus. There is no doubt that more could be grown in this country, and in the open not against a wall. As a general rule in the western states they grow in dry and poor soil in full sun and in full exposure. Most of them have a wide range. Local botanists and gardeners with their climate do not bother to collect seed from the highest altitude, but from the easiest location. In turn the seeds of these plants have reached the British Isles. We are certain that many of the so-called tender species would have a much better chance in our gardens if seed was collected from the upper limit of their growth. This applies also to arctostaphylos.

After leaving this scree, which had been made into a small State park called Rough and Ready, we went up a fierce logging road by the side of Whisky Creek. There we saw an acre of darlingtonias in full flower, various colour forms of the charming azalea, *Rhododendron occidentale*, *Phlox speciosa* and a number of plants of *Lilium bolanderi*, unfortunately not yet in flower, growing in the rocks in a heavy gravelly soil. Later we went up another valley to see a stand of the red *Delphinium nudicaule* and the blue *D. menziesii* along with purple and violet natural hybrids between the two species, a good example of what close association can do.

In Portland and Seattle we found the gardens in a sorry state after the great freeze of November 1955. In October of that year they had had a particularly mild and wet month with upwards of 8 inches of rain to be followed early in November by 20 degrees of frost. Rhododendrons suffered severely, but the worst to suffer were probably the flowering cherries of which hardly one had escaped death or mutilation.

In Portland we were much impressed by the new Experimental Garden of the Rhododendron Society of America. This lies on two peninsulas in a lake. Apart from its charming setting it is a perfect example of public co-operation that might well be followed in this country. The Society plan and run the garden and supply the plants, while all the labour is done by the City of Portland. Frost damage in this trial garden was not so severe as in Seattle. Some of the most interesting plants for us were various forms of the native *Rhododendron macrophyllum* (*californicum*). We saw stands of the type later in the Olympic mountains, but in this trial garden there was an attractive white and a charming small and compact pink form that had been found right on the Pacific shore.

There are lovely gardens in Portland such as that of MR. KERR, an

enthusiast on magnolias. He still plants them and says he is going to see them flower; and he is ninety-five, the right stuff for a gardener. We also saw the interesting collection of plants of MRS. BERRY who is so well known as a grower of American alpines and rare plants from all over the world. The skill that she shows in growing Petiolarid primulas deserves great praise, as the heat in summer often approaches three figures. We also spent two days with MR. JAN DE GRAAFF where we were delighted to see an old friend, also known to many of you, in HAROLD COMBER. It is almost unbelievable the work they are doing in hybridizing lilies. Unfortunately, most of them were not yet in flower, but we saw sufficient in the greenhouses to see what an advance is being made in the selection of pink trumpets.

In Seattle, as we mentioned before, we found the full force of frost damage. BRIAN MULLIGAN told us that in the Arboretum alone over 1,200 rhododendrons had been killed. In MRS. FREDERICK'S garden in The Highlands, one of the last of the great gardens in that part of the world, every flowering cherry was a wreck, and there were dozens of them. In the Arboretum, splendidly managed by BRIAN MULLIGAN, almost the only plants we saw that had escaped serious damage were azaleas, robinias, and, oddly enough, magnolias.

As there was little to see in private gardens, the MULLIGAN family and another friend took us for a weekend trip round the Olympic peninsula, west of Seattle, between Puget Sound and the Pacific. In June it was still too early for the high tops, so we concentrated on the lower valleys running to the Pacific Ocean, the Queets and the Hoh river valleys. This is National Forest, the land of the giant Douglas, sitka and thuya where the rainfall is 150 inches a year. Luckily it was more or less a fine weekend. It is a most extraordinary country. Apart from an occasional plant of *Rhododendron macrophyllum* in clearings, there are very few shrubs or herbs; nothing but giant trees and moss. It is odd that some well-known genera of trees are completely missing. For instance there is not a birch in the whole of the Olympics. Its place is taken by an alder, *Alnus oregona* which looks uncommonly like birch. We did not see the largest known Douglas, as it lay too far from the road, but we did see the tallest sitka, a giant of 230 feet (Fig. 78); we have seen forests in many parts of the world, but nowhere where the beauty and majesty of the individual tree impressed us more.

THE NATIONAL SPECIES COLLECTION OF TULIPS AT CAMBRIDGE*

J. S. L. Gilmour, M.A., F.L.S., V.M.H. and R. W. Younger, M.A.

IN 1947 the Ministry of Agriculture and Fisheries, on the recommendation of the Agricultural Research Council and the Agricultural Improvement Council, inaugurated a scheme for the establishment of "National Species Collections" of genera of garden interest at a number of horticultural institutions. The University Botanic Garden at Cambridge undertook the genus *Tulipa* and the collection that has been built up now forms one of the most attractive features of the Garden in spring.

So far the tulips have been grown in beds, the sequence of species adopted being the botanical arrangement used in SIR DANIEL HALL'S book *The Genus Tulipa* (1940). In future it is hoped to grow the collection in a small, specially constructed, rock garden, with separate "compartments" for each species. This should provide a more attractive setting than the present flat beds. Two rock gardens will be made, and the tulips will be moved from one to the other each year, as we have found by experience that "Tulip fire" (*Botrytis tulipae*) is more easily controlled if the bulbs are not grown on the same site two years running. Annuals will be grown on the rock garden that is not being used for the tulips.

The moving of the collection each year involves, of course, lifting and replanting of the bulbs. Quite apart, however, from the change of site, lifting has several advantages, It enables diseased bulbs to be discarded, and further, in cold stiff soils it is almost essential if the bulbs are to ripen properly. In their natural habitats most species experience a cold winter, followed by a short period of growth and flowering, succeeded, in turn, by a hot dry summer when the bulbs are baked and ripened off. This ripening process, except in very light, dry soils in full sun, is best ensured by lifting and storage. Many of the species, however, in the right soil, will flourish year after year if left in the ground, and one or two, for example *T. sprengeri*, do much better if left undisturbed and will seed themselves all over the garden.

Lifting should be done immediately the foliage withers, the time for such an operation depending on the species concerned, but all should have been lifted before the end of July. When they are lifted they should be spread out in trays and placed under the lights of an airy frame where they can be completely dry and exposed to the sun; shading, to prevent "scalding", is required on very bright days only. Shelves in a dry glasshouse are also very suitable for accommodating the trays containing the bulbs during ripening. When thoroughly ripe (this can be

* Based on an article by J. S. L. GILMOUR and R. W. YOUNGER in the *Daffodil Year Book* 1956 and on a lecture by J. S. L. GILMOUR given to the Society on February 5, 1957.

roughly assessed by the tunic of the bulb cracking and loosening), they should be cleaned, offsets removed for growing-on in the nursery, then stored in ventilated paper bags in warm, airy, dry conditions until planting time.

At Cambridge a special store has been constructed to contain the National Species Collection during their resting period. The floor of perforated zinc on lathes is raised a foot above a concrete base. The intervening space, containing electrical tubular heating, is enclosed on three sides. A series of slatted shelves reaches to the eaves, where perforated zinc ventilation allows a continuous current of warm air to move up the store.

The bulbs are stored in trays with perforated zinc bottoms, and these are placed on the slatted shelves. A thermostat set at 63° F. ensures a uniform temperature during the storage period. By whatever means the bulbs are stored, it is essential to guard against mice.

The soil for tulip species, provided it contains lime, need not be too rich; indeed, too much food of a nitrogenous nature can be harmful. A dressing of bonemeal applied when the bulbs are planted in the autumn is sufficient. Depth of planting is important. The dwarfs should be buried at least 3 inches, whilst such tall-growing species as *T. tubergeniana*, *T. fosteriana* and *T. praestans* should be planted at a depth of between 6 and 9 inches. If sand of a sharp nature is placed in the holes during planting it will greatly assist the drainage, and the bulbs when lifted will come up easily and cleanly.

At the present time we are growing nearly sixty species in the Collection at Cambridge, and they make a very fine show of colour from March until May. The bulbs came from several sources. At the outset we were fortunate enough to obtain many from SIR DANIEL HALL'S collection at the John Innes Horticultural Institute and from Wisley, while subsequently a number of other donors have generously sent us material, including several collections from the wild. Every effort has been made to check the identity of the species grown, and in this work MR. J. R. SEALY of Kew has given us much assistance. The genus is not an easy one taxonomically, and one or two puzzles among our plants still remain unsolved.

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THE NATIONAL SPECIES COLLECTION OF TULIPS AT CAMBRIDGE*

J. S. L. Gilmour, M.A., F.L.S., V.M.H. and R. W. Younger, M.A.

IN 1947 the Ministry of Agriculture and Fisheries, on the recommendation of the Agricultural Research Council and the Agricultural Improvement Council, inaugurated a scheme for the establishment of "National Species Collections" of genera of garden interest at a number of horticultural institutions. The University Botanic Garden at Cambridge undertook the genus *Tulipa* and the collection that has been built up now forms one of the most attractive features of the Garden in spring.

So far the tulips have been grown in beds, the sequence of species adopted being the botanical arrangement used in SIR DANIEL HALL'S book *The Genus Tulipa* (1940). In future it is hoped to grow the collection in a small, specially constructed, rock garden, with separate "compartments" for each species. This should provide a more attractive setting than the present flat beds. Two rock gardens will be made, and the tulips will be moved from one to the other each year, as we have found by experience that "Tulip fire" (*Botrytis tulipae*) is more easily controlled if the bulbs are not grown on the same site two years running. Annuals will be grown on the rock garden that is not being used for the tulips.

The moving of the collection each year involves, of course, lifting and replanting of the bulbs. Quite apart, however, from the change of site, lifting has several advantages, It enables diseased bulbs to be discarded, and further, in cold stiff soils it is almost essential if the bulbs are to ripen properly. In their natural habitats most species experience a cold winter, followed by a short period of growth and flowering, succeeded, in turn, by a hot dry summer when the bulbs are baked and ripened off. This ripening process, except in very light, dry soils in full sun, is best ensured by lifting and storage. Many of the species, however, in the right soil, will flourish year after year if left in the ground, and one or two, for example *T. sprengeri*, do much better if left undisturbed and will seed themselves all over the garden.

Lifting should be done immediately the foliage withers, the time for such an operation depending on the species concerned, but all should have been lifted before the end of July. When they are lifted they should be spread out in trays and placed under the lights of an airy frame where they can be completely dry and exposed to the sun; shading, to prevent "scalding", is required on very bright days only. Shelves in a dry glasshouse are also very suitable for accommodating the trays containing the bulbs during ripening. When thoroughly ripe (this can be

* Based on an article by J. S. L. GILMOUR and R. W. YOUNGER in the *Daffodil Year Book* 1956 and on a lecture by J. S. L. GILMOUR given to the Society on February 5, 1957.

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because of its greater freedom of flowering in our climate. *T. celsiana*, another close relative of *T. australis*, flowers later and is a first-class garden plant (Fig. 74).

T. aucheriana is a distinct species from the Near East, flowering during April. The little pink flowers, which open to a flat star, are carried on 2-inch to 3-inch stalks. The segments are pointed, the outer with a broad stripe of greenish yellow on the back, the inner with two green or brown veins, giving the whole flower a general pinky-brown colour (Fig. 75).

Graceful and brilliant in colour, *T. linifolia* is one of the most delightful members of the genus. The height varies from 8 inches to a state where the flowers may be almost sessile. The backs of the segments are dull red, but the inner surfaces are a brilliant glossy scarlet, with a deep purple, almost black, blotch forming a circle at the base of the segments. It comes from Eastern Bokhara and in the full sun will form a patch of colour of unrivalled brilliance during May. Differing only in the colour of the flower from *T. linifolia*, *T. batalanii* also comes from Bokhara. It has the same charming habit but is of a pale buff-yellow colour with an olive blotch.

T. turkestanica, of easy culture, is one of the earliest to flower, generally opening early in February. It is not by any means one of the most brilliant of the genus but its earliness makes it worthy of a place in the rock garden. The flowers are small and open to a pointed star. As many as eight may be carried on short pedicels on a common stalk. The outer petals are heavily pigmented on the back. The inner have a single green line. Within, the colour is ivory white, with an orange blotch.

T. biflora is often confused with *T. turkestanica*. Flowering a few days later, it can be distinguished by its fewer flowers, up to five on short pedicels, and by its anthers which are yellow with a purple tip. In *T. turkestanica* the anthers are purple or chocolate brown.

The charming *T. stellata* must be represented in every collection of *Tulipa* species. It is a Himalayan species found up to a height of 12,000 feet. Its delicate colouring, outer segments tinged with red on back, inner surfaces white with a light yellow blotch, shading into the white, is most attractive. Of dainty habit, in height about 8 inches, it is an excellent plant for the rock garden, flowering in mid-April.

T. stellata chrysantha is regarded as a colour variant of *T. stellata*. It is one of the loveliest of the smaller species and merits a prominent place in the rock garden. It is slightly dwarfer than *T. stellata* and the colour is a brilliant yellow, the backs of the outer segments being heavily shaded with red.

An allied species, *T. clusiana*, bears the charming name of "The Lady Tulip". It is well worth such a name. Dainty in colouring and habit, its slightly scented flowers open widely to a flat star in mid-April on 15-inch stems. In colour the backs of the outer segments are crimson with a white margin; inside the segments are white, sometimes tinged with

crimson at the tips, with a dark blue blotch at the base. Its home is in the mountainous regions of Persia, extending into Iraq and N. India.

T. tarda has been in cultivation for many years as *T. dasystemon*. The flowers open to flat stars and there are as many as six, borne on short pedicels, to each stem. It reaches about 6 inches in height. The outer segments are tinged on the back with green and a little red, while the backs of the inner segments are yellow below and white near the tip, with one green and two purple lines. Within, the flowers are yellow to about half their length, then fading to white at the tip. Coming from Eastern Turkestan and flowering with the later species in May, it increases freely and soon grows into a dense patch.

Not one of the easiest to maintain in cultivation is *T. urumiensis*, a rare species from Asia Minor. It is nevertheless well worth the trouble. Flowering at the end of April, the outer segments are pigmented on the back with olive and red, the backs of the inner segments having three green lines. Inside, the flowers are a lovely clear yellow.

One of the more easily recognized species is *T. greigii*, the foliage being marked with brown-purplish blotches or stripes. It grows to 9 inches, with large flowers opening to a cup. The colour is a bright scarlet with a yellow base, within which is a rounded dark olive or black blotch. One of the first to be introduced into cultivation from Central Asia (Turkestan), it does not increase freely by offsets. Today it is being used extensively for breeding. It is a magnificent garden tulip but must be protected from strong winds. There is a yellow form which, although not so startling in colour as the scarlet, is nevertheless very attractive.

For general garden cultivation one of the best species is *T. eichleri* from Transcaucasia. This has a very good constitution and increases freely. One of the brightest in colour, the flowers are campanulate, opening to a wide-mouthed bell, the outer segments shaded to a light buff on the backs. Inside, the flower is a brilliant crimson scarlet. The black blotch is margined with yellow. It grows to a height of 12 inches (Fig. 73).

The largest and one of the most brilliant of all *Tulipa* species is *T. fosteriana*, closely allied to *T. eichleri*. The flower stalks, up to 12 inches long, are crowned by an immense flower which opens flat, in the sun up to 8 inches across.* The colour is a brilliant glossy scarlet, rather lighter on the backs of the segments; inside, a black starry blotch is boldly margined with yellow. It is a robust grower and one of the easiest to cultivate. It colour would be difficult to surpass for brightness by any other garden plant. It flowers in late March to early April (Fig. 72). There are several other large, red-flowered, tulips allied to *T. fosteriana* that are well worth growing, such as *T. ingens*, *tubergeniana* and *praestans*.

One of the most popular tulips, and deservedly so, is the "Water-lily Tulip", *T. kaufmanniana*. It is very hardy, possesses a fine constitution, and is a prolific flowerer. The colouring of this species is difficult to describe, the ground colouring being primrose, and the outer segments

* Recently lower-growing forms such as 'Rockery Beauty' have been raised.

having a patch of pale carmine on the outside with a cream-coloured edge. There are numerous named colour forms in the trade. One of the earliest to flower, its nymphaea-like flowers open in March.

Because of its extreme earliness in flowering, *T. violacea*, a dwarf species from N. Persia, is more suitable for the Alpine House than out of doors. If protection is afforded, however, it is a delightful plant for the rock garden. Flowering in early March it introduces the many glories to be witnessed in the later species. The backs of the outer and inner segments are violet, whilst inside the colour is rich crimson to purple with a blue or olive blotch, margined with yellow at the base. It is one of a number of closely allied forms, grouped under the name *T. humilis*, of which 'Violet Queen' is one of the most attractive.

The latest of all the tulips to flower is *T. sprengeri* which comes from Asia Minor. The flowers are a uniform dull scarlet; the petals are narrow and there is no blotch. One of the easiest to grow, it will increase readily from self-sown seed if planted in semi-shade under shrubs (Fig. 71).

Of particular interest are the three species endemic to Crete: *T. cretica*, *T. saxatilis* and *T. bakeri*. *T. saxatilis* has long been in cultivation. Its combination of colours, lilac and yellow, repays the extra care required to induce it to flower. It should be planted in a warm, well-drained site, and owing to its stoloniferous habit of spreading must be confined by a margin of slates set vertically round the bed, below ground level. Once this area is filled with bulbs it will commence to flower freely. Its broad, flat, glabrous leaves which appear in December, are uninjured by frost. The flowers open in late April on stems 6 to 9 inches high. Closely allied to *T. saxatilis* is *T. bakeri*. This is also markedly stoloniferous. In colour the outer segments are stained green on the backs, the inner having a well-defined broad green rib on the backs. Inside the colour is purple with a yellow basal blotch reaching one-third the way up the segments. It flowers in early March, the flowers being well shaped and about 6 inches high. *T. cretica*, the third member of the Cretan group, is also stoloniferous and possesses, like the other two, glabrous and rather shining leaves. It is much dwarfer, however, reaching a height of about 4 inches. The outer segments of the flower are tinged with purple and green on the backs; the inner segments are tinged with pink on the backs, with a distinct line of crimson. The inner surface is nearly white, tinged pink at the tips, with a dull yellow blotch. All three are worthy of inclusion in any collection.

Flowering towards the end of April, *T. montana* (*wilsoniana*), though not possessing the constitution of *T. linifolia*, is as brilliant in colour and considerably larger, with attractive glaucous leaves. The flowers open almost circular and flat. They are an intense crimson scarlet within, duller on reverse, with a small circular black blotch. It comes from N.W. Persia.

There are three closely allied species from the Eastern Mediterranean that are worth growing for their unusually coloured flowers: *T. hageri*

(copper-coloured) and *T. orphanidea* (orange-brown) come from Greece and Gallipoli, and *T. whittallii* (orange) from Smyrna.

Many other species are, of course, in cultivation, but we would like to close these brief notes with a word about an outlier of the genus from the Far East, *T. edulis* (China, Korea and Japan). It is a minute plant of no horticultural value but of great botanical interest. It differs in several characters from other species and has, in fact, been placed in a separate genus, *Amana*. Both *T. edulis* and its closely allied form (*graminifolia*) are growing at Cambridge and, despite their humble appearance, are among our proudest possessions!

BAMBOOS

Graham Stuart Thomas, F.L.S.

I. CULTIVATION AND GARDEN VALUES

IT is strange how bamboos are neglected by gardeners, for they provide perennial greenery of a light and cheerful tone, coupled with a grace that is not excelled by any other shrubs. As a contrast to the heavy evergreen shrubs, such as rhododendrons, cotoneasters, hollies, viburnums and others, they provide the ideal leafy foil in winter, while in summer their leaves rustle in the breeze and create an illusion of coolness on the hottest days (Fig. 82).

It would seem there are some misunderstandings to lay bare, and some prejudices to overcome before they can be taken properly to heart, as they deserve, by the gardening public today. I think their culture and management, both so extremely simple, are not really understood, and, of course, their apparent lack of flowers is a serious drawback in these days when colour appears to mean so much to us. To my mind, broadly speaking, they have their disadvantages: they are not permanent for really important positions because of their extraordinary flowering propensities; some of them are appallingly invasive; and they are useless for indoor decoration, as they wilt quickly. The last point need not concern us here, and to their flowering I will return later (they have the peculiarity of flowering at long intervals, and, as a result, often of dying). The invasive character can be avoided by planting the best species.

Often, too, one hears an otherwise good gardener—and one who knows the beauty and exact cultural requirements of a choice lily or a difficult primula—state that he would love to grow bamboos but that he has no swamp in his garden. He is very much surprised when told that swamps are exactly what the hardy species do not need. It is strange how this myth that bamboos require an excess of water has grown. We do sometimes see good bamboos in some of our larger gardens and parks, but in general, in gardens of moderate size, they are more often represented by a declining plant of *Arundinaria japonica* (*Pseudosasa*

japonica), whose noble and dignified duty it is to hide the dust-bin or form a pleasant retreat in the chicken-run. How rarely one sees a plant of *Phyllostachys viridi-glaucescens* and *Arundinaria nitida* playing a worthy part in the economy of such a garden! Many people are also under the impression that bamboos are only tropical plants, although collections are grown outdoors in all our botanic gardens.

There are, of course, many bamboos which are natives of tropical countries, but there are plenty of species from the Northern Temperate zone which are hardy in this country, and they give us all the variety we could want. Let us examine them, therefore, first from the garden point of view, and then in a more scientific way. But I must first explain that the old genera, *Bambusa*, *Arundinaria*, and *Phyllostachys*, have of late been reclassified under several new generic names; therefore the new nomenclature must be taken in our stride, although only species which have long been in cultivation are mentioned in this article.

The best time for transplanting is during rainy weather in May or early June. At that time of the year the young shoots ("culms") are rising and grow very fast, and if the plants are carefully lifted and kept thoroughly moist, and watered well at the time of planting, they will go on growing without any check. If moved in the autumn, or during dry cold periods in winter and early spring, they are more likely to suffer; the leaves frequently die, and often the stems as well, and they take more than one season to recover.

Their cultural requirements are really few. Many of our hardier species come from the islands of Japan where the air is laden with sea mists; the leaves have no hard cuticle to reduce transpiration, and thus we should give them as much shelter as possible. They should be regarded as plants which thrive best in semi-woodland conditions, enjoying the same shelter as rhododendrons, but they are not averse to lime. They are capable of resisting many degrees of frost, for lowness of temperature, when not accompanied by dry winds, does not harm them. The leaves may curl a little, but, with the return of milder weather, they soon regain their original beauty. Cold, dry winds spell disaster for the beauty of the plant—their leaves curl up and sometimes turn brown, and the plant is thoroughly unsightly.

Returning to their soil requirements, although they will thrive in limy soils, they are dependent for their maximum luxuriance on a rich soil of a woodland nature. It therefore follows that where rhododendrons thrive they will do likewise. Where the soil is of an ordinary garden quality, a quantity of old manure—or compost or other humus mixed with hoof-and-horn and bone-meal—will help them, and to encourage them a top dressing of similar material, a year after planting, should be given. Occasionally old stems may be removed, when dead or dying, from the base, but otherwise they need no pruning.

We have now arrived at more debatable points: the positions in which bamboos should be used and a selection of species. They show

to best advantage when they are given a background of dark evergreens, and as, generally speaking, both conifers and evergreen shrubs lack the lively green and youthful grace of the bamboos, a most fitting complement is thus provided.

Their use for screens and hedges is scarcely appreciated; many of the species form dense blocks of light greenery; they are neat and graceful in shape and do not send out suckering stems any distance from the parent plant; indeed, in the propagation of stock this is a disadvantage in the more desirable garden species. The commonest species in our gardens is *Arundinaria japonica* and this makes a splendid screen. Plants 6–8 feet in height can be moved into position and the effect is immediate. This species and *A. anceps* are very useful for screens, but are rather invasive. *A. nitida*, usually 8–10 feet, would be far more compact, while the most valuable from the screen point of view, and again a very compact grower at the root, is *A. fastuosa*. This would provide a wall of fresh greenery 15–20 feet in height in much less time than any of the orthodox evergreens. This is one of the best features of bamboos: they grow rapidly and even bring into the garden at the time of planting an atmosphere of long establishment.

All bamboos are exceedingly effective when planted on the banks of lakes and streams. In the winter their arching plumes will contrast strikingly with the thickets of red-twigged dogwoods and orange willows, while for summer contrast the great leaves of rodgersias and *Peltiphyllum peltatum*, and the immense foliage of *Gunnera manicata* will provide ideal contrast. The roots of the bamboos are very effective for stopping erosion, and for this reason *Sasa palmata* (*Bambusa palmata*) is sometimes planted, being a low-growing species (5–6 feet) that is readily obtainable, but in common with most other small-growing species it is a rapid colonizer. *Arundinaria razumowskyi* is a shorter plant (3–4 feet) than *Sasa palmata*, but otherwise similar. *S. palmata* has very broad leaves, 3 inches wide and about a foot long; they are very striking, as also are those of a similar species with white edges to the leaves, *Sino-bambusa veitchii*. These three large-leaved species I regard as some of the most striking of foliage plants for landscape effect. There is a golden-striped species for those with a liking for contrasting foliage, *Arundinaria auricoma* (*Bambusa fortunei aurea* or *Pleioblastus viride-striatus*), which spreads very slowly at the root and grows to 3–4 feet in height. It is a most useful plant for sunny positions, where its colour is of the brightest, and it can, by its unique line and colour, add a fine touch of lightness to a shrub border in late summer that might otherwise be dull. For all bamboos are at their best in summer and autumn; then the leaves are at their freshest before they are bruised by winter gales.

It is unsafe to plant any short-growing species other than *Shibataea kumasasa* (*Phyllostachys ruscifolia*) in a small garden, and this, while a plant full of character and the obvious choice in the circumstances, is so dwarf and neat that it lacks the grace inherent in most bamboos. It may

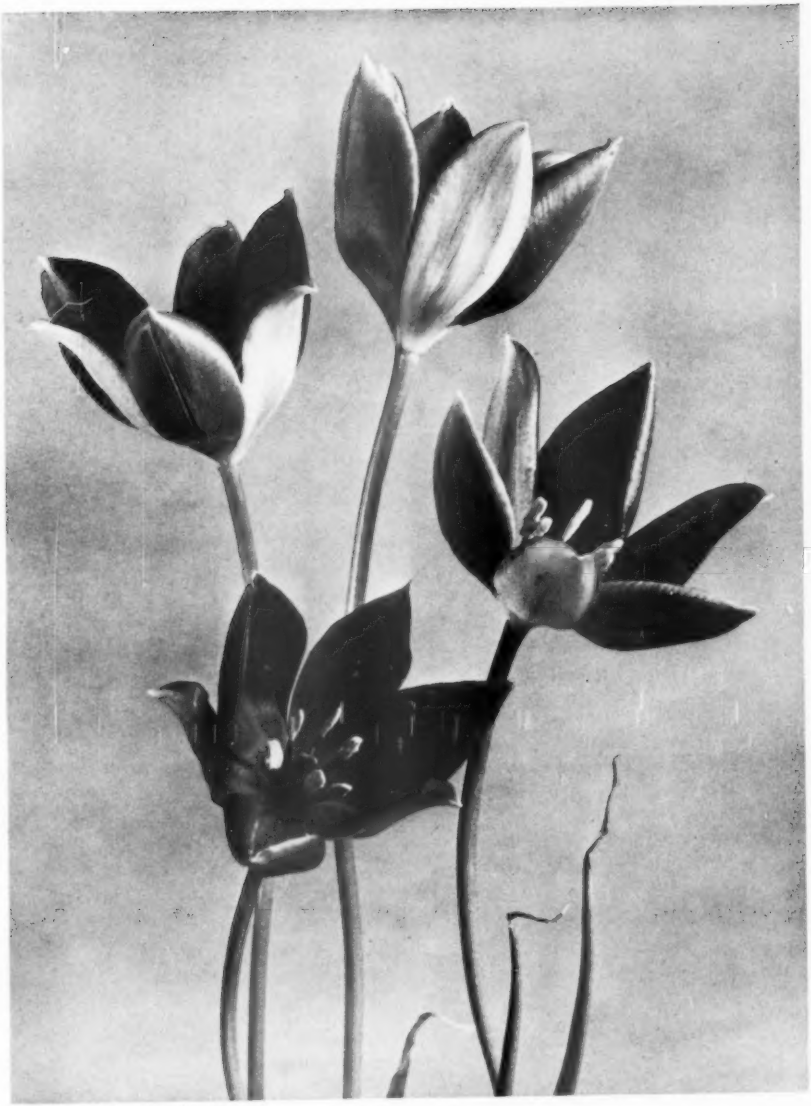
be likened to *Arundinaria fastuosa* in its general appearance; both are erect and bear their leaves stiffly outwards, but the *Shibataea* only reaches about 3 feet in height. *Arundinaria vagans* should be avoided at all costs, being pertinacious and insidious, and ineradicable when once it has made its way in and around established shrubs. It is a pretty little grassy plant growing to about 1 foot in height.

Let us now turn to the species which, by their peculiar arching grace and trustworthiness in the garden, give us all we look for in bamboos. These all have leaves 3–5 inches in length and about ½–1 inch wide, borne in clusters on short side twigs up the long canes, which gradually assume a beautiful line, as they age, when the burden of leaves—especially after rain—weighs them outwards from the clump. Among these, *Phyllostachys bambusoides castilloni* holds a high place, not only for the beauty of its foliage and growth, reaching to a height of about 9 feet and as wide, but also because of its handsome stems which are marked with a long flash of yellow where each side branch diverges. Unfortunately it is not altogether hardy, and the same may be said for one of the most beautiful arundinarias, *A. spathiflora*. *Phyllostachys aurea* has less brilliantly marked culms than *P. bambusoides castilloni*, but is quite hardy.

There is no doubt that for the average garden *Phyllostachys nigra*, with polished maroon-black stems, and its possibly even more beautiful variety *P. nigra* var. *henonis*, together with *P. flexuosa*, are the most valuable. They have every charm expected of a bamboo and are hardy and compact growers, spraying outward their feathery stems to a height and diameter of some 8 feet in ordinary conditions, but growing to nearly twice this size in specially favourable sites. Perhaps the most strikingly beautiful of all the hardy species is *P. viridi-glaucescens*, but this needs a space of 20 feet in diameter and will grow to a similar height if well suited. I cannot speak too highly of these four bamboos; they are so extremely beautiful and bring to mind the ethereal grace of these plants so often depicted by Japanese artists.

The arundinarias, on the other hand, while they have as much grace, tend to throw up their canes in a dense thicket, then arching over in long plumose masses of foliage, being much more delicate in the cane but more solid in general outline than the phyllostachys. I think *Arundinaria murielae* is one of the best for smaller gardens; the canes are waxy with bloom while young, while the foliage is of pale green. It attains 8 feet or so in height, and although it is partially deciduous, it may for horticultural purposes be considered as a small version of *A. nitida*, a true evergreen whose great clumps of erect canes may be seen fairly often in the larger gardens, spraying forth their plumes of greenery. Both species are reasonably compact at the root, but many other species of arundinaria are apt to be troublesome.

Chusquea culeou, the only species of this South American genus which is found occasionally in our gardens, is an attractive plant sending up tall canes set with bunches of small leaves, giving a brush-like



Photo, J. E. Downward

TULIP SPECIES

FIG. 71—*Tulipa sprengeri* (See p. 246)

TULIP SPECIES

FIG. 72—*Tulipa fosteriana* (See p. 245)

Photos, J. E. Downward

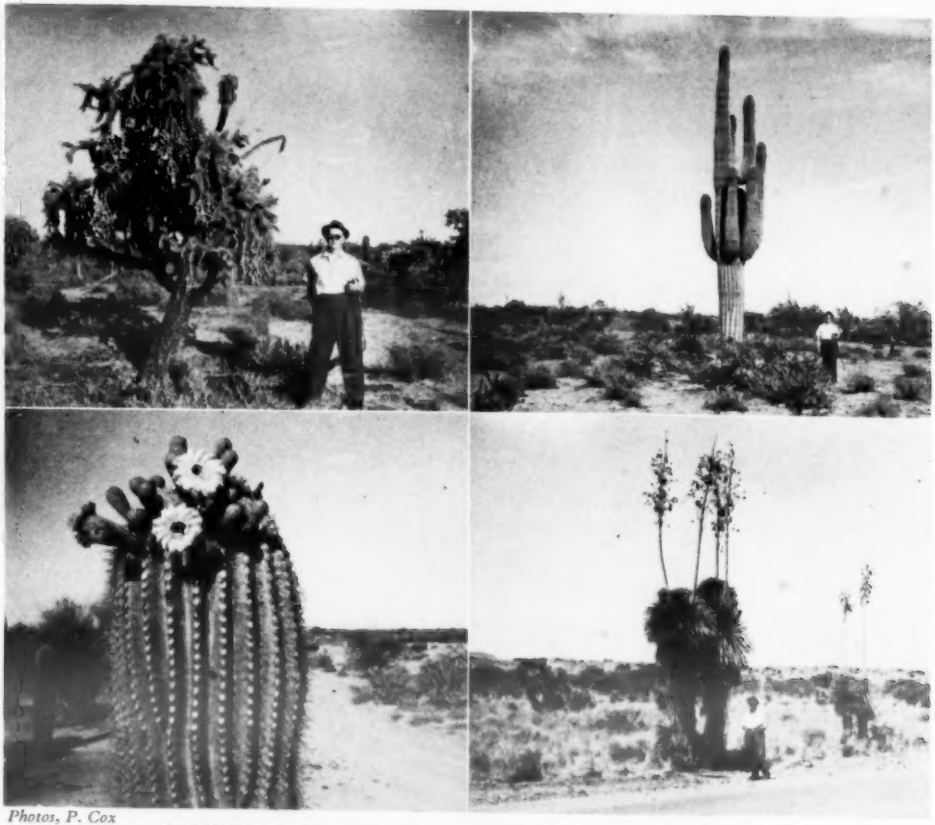
FIG. 73—*Tulipa eichleri* (See p. 245)

TULIP SPECIES

FIG. 74—*Tulipa celsiana* (See p. 244)

Photos, N. K. Gould

FIG. 75—*Tulipa aucheriana* (See p. 244)



Photos, P. Cox

IMPRESSIONS OF THE WESTERN STATES, U.S.A.

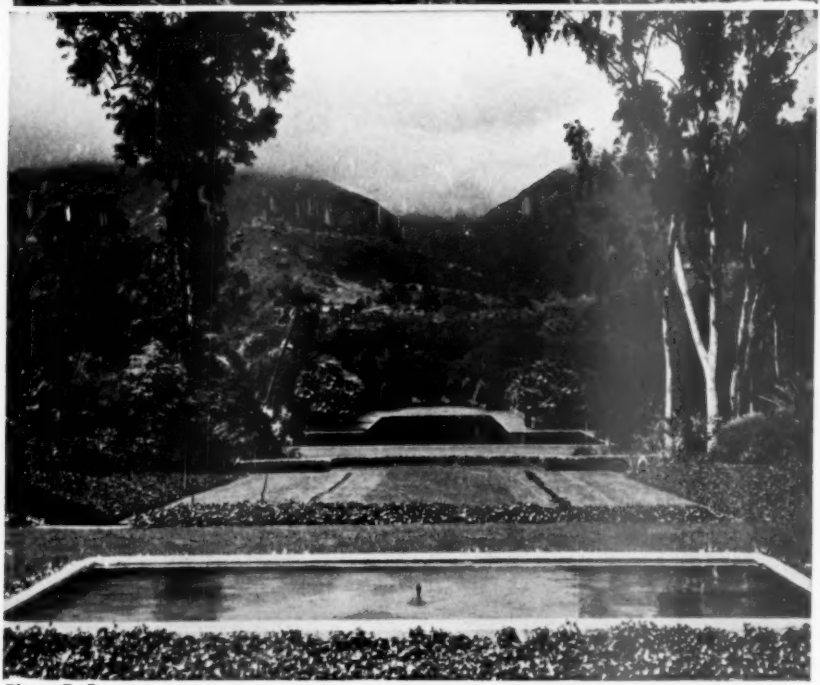
FIG. 76—*Top left:* An old plant of the Jumping Cholla, *Opuntia bigelovii*, with fruit of previous year (See p. 237). *Top right:* A Giant Sahuaro, *Cereus giganteus*. The holes are made by a woodpecker (See p. 236). *Bottom left: C. giganteus* in flower (See p. 236). *Bottom right:* A large and old plant of *Yucca elata* with the flowers almost over (See p. 237)

woodpecker (See p. 236). *Bottom left: C. giganteus* in flower (See p. 236). *Bottom right:* A large and old plant of *Yucca elata* with the flowers almost over (See p. 237)

Photo, Santa Barbara Botanic Garden

IMPRESSIONS OF THE WESTERN STATES, U.S.A.

FIG. 77—The Strawberry Meadow of the Santa Barbara Botanic Garden with Californian poppies and other native plants (See p. 239)

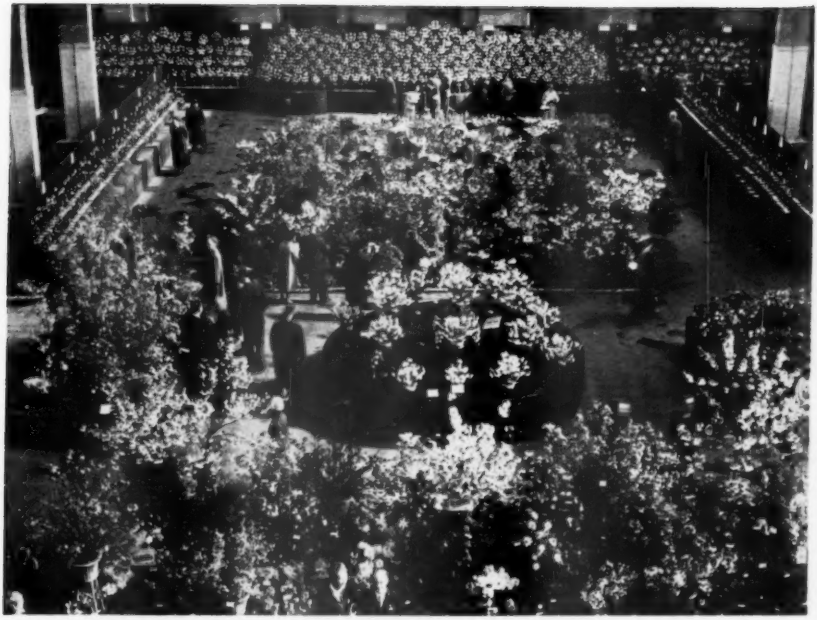


Photos, P. Cox

IMPRESSIONS OF THE WESTERN STATES, U.S.A.

FIG. 78—MR. B. MULLIGAN and his family and E. H. M. COX at the foot of the largest known sitka, in the Hoh Valley in the Olympics, where the annual rainfall is about 150 inches (See p. 241)

FIG. 79—A typical large garden in Santa Barbara. Note the use of ivy as a ground cover (See p. 238)



Photo, J. E. Downward

FIG. 80—The Fortnightly Flower Show and Daffodil Competition held in the New Hall on April 2 and 3, 1957

Photo, R. P. Scase

FIG. 81—Dutch lights and cloches in which the 1956 melon trials were made. Notice the method of ventilation (See p. 266)

Photo, G. S. Thomas

FIG. 82—A group of bamboos at Muncaster Castle, showing their grace and contrast to other shrubs and plants (See p. 247)

effect. It appears to be quite hardy, and there is a fine plant in the National Trust garden at Hidcote, Gloucestershire. Its solid stems fortunately enable it to be used in a cut state for a short time.

Beautiful as all these plants may be in late summer, to see them from a distance during mild hoar-frost, their leaves glittering with a thousand jewels in the pale winter sunlight, is a sight to gladden the heart of the most phlegmatic mortal.

2. BOTANY, DISTRIBUTION AND FLOWERING

Having, I hope, inspired readers to accompany me a bit further into the subject, by attempting to encourage them to consider growing some of the more beautiful and suitable species, I propose to look rather more carefully into this remarkable race which are, in effect, shrubby grasses. They belong to the Family Gramineae, in the sub-family Bambuseae, and there are about 250 species, grouped, as will be understood by the foregoing paragraphs, into several genera, and they are found mostly in the tropics and subtropics. Since they flower so rarely, botanical classification is mainly according to vegetative characters, such as the strongly angled stems, which give the distinguishing mark of the genera *Phyllostachys* and *Shibataea*. The latter has zig-zag stems whereas *Phyllostachys* stems are straight. All other genera have smoothly rounded or terete stems; *Sasa* is distinguished by the side branches being almost entirely solitary; the several remaining genera bear branches freely at each node, and are further classified by the leaf sheaths, some of which are persistent, while others fall quickly; the leaves and the flowers are also important in determining the species.

The veins of the leaves offer a useful means of distinguishing tender from hardy species. No tender species at present known possesses tessellated veins, that is to say, that apart from the longitudinal veins and their smaller crossing members, all species with this peculiarity are hardy.

By far the largest of the American genera is *Chusquea* with seventy species; this genus is very characteristic of high altitudes and several species reach the snow-line in Peru and Chile, one species, *C. aristata*, occurring at 16,500 feet. The chusqueas form impenetrable thickets known locally as "Carizales". In common with many other natives of countries south of the equator, in habitats which would suggest a state of hardiness in this country, these species do not take kindly to any but our most favoured gardens. It is impossible to anticipate their behaviour by the usual climatic or geographical criteria.

The two New World species of arundinaria, *A. gigantea* (*A. macrosperma*) and *A. tecta*, the latter often considered as a variety of the former, occur in the alluvial river-bottoms of the southern United States, particularly along the banks of the Mississippi, where they form dense thickets, known as "Cane-brakes". These cane-brakes were in the old days of the greatest service to escaping negroes in affording shelter

(See p. 247)

and hiding from their pursuers as one may read in MARK TWAIN'S *Life on the Mississippi*. Both *A. gigantea* and *tecta* are occasionally seen in gardens, but are more of botanical interest than ornamental value.

In Africa six genera are represented, comprising about fifteen species. The flora of Madagascar is rich in species, and nine genera are represented on the island. But the main centre of distribution is in south-eastern Asia. Along the seaboard of India, where the rainfall is high, bamboos are very abundant, extending into Sikkim, Nepal and the cold regions of the Himalayas. China and all the islands of Japan are rich in bamboos (whence come our garden species) and they are to be found through the Malayan Archipelago down to the northern parts of Australia.

Perhaps the most interesting character about them is their flowering, which appears to vary to a marked extent throughout this group of plants. In some species the production of flowers is sporadic, on the other hand SIR D. BRANDIS records * the flowering of certain species in the East Indies at intervals of thirty-two years. It is, however, a fact that some bamboos, *Dendrocalamus strictus* for instance, bear flowers and fruits fairly regularly once a year.

It is difficult to say what conditions determine or are conducive to their flowering. Perhaps in the case of the species which produce no flowers for long periods, the plants must pass through a number of years in an adult state, storing up energy and materials to cope with the exhausting process of bearing fruit. When the plant has thus reached what we might term a state of puberty, the actual production of flowers may be dependent on such a factor as climatic conditions, a period of drought for instance; in fact, we might imagine such plants, which are in a condition of potential fecundity, becoming extremely sensitive to abnormal atmosphere changes and bursting into flower during a period of even slight drought. In the east there is a belief that the flowering and fruiting of bamboos is a portent of evil, and usually synchronizes with the failure of crops. This might be explained in that a period of dryness which would be favourable for the production of flowers in the bamboo, may be fatal to a rice crop which is very intolerant of drought.

In literature relating to these plants we find many records of flowering, this being a phenomenon in which much interest was taken. SIR W. SLEEMAN observes that in 1836 all the large bamboos which had been the most beautiful feature of the valley of Dehra Dun in north-east India ran to seed and died. In this district it was generally believed that a man who had seen two seedings of bamboo must be about sixty years old. According to the *Journal of the Agricultural and Horticultural Society of India* a general flowering of the bamboo took place in Orissa—a province in eastern India—during a time of great famine; the seeds, cooked and eaten like rice, gave food to many thousands.

* In *Naturlichen Pflanzenfamilien.*

DR. WALLICH tells of a celebrated grove of bamboos surrounding the city of Rampore, every stem of which died after flowering. A similar event occurred forty years previously. AUGUSTE ST. HILAIRE, a botanist who explored Brazil, mentions a graminaceous plant with which he was entranced by the aerial beauty of its long canes, from 40 to 50 feet high, bending in elegant arches, crossing one another in every direction, tangling their huge panicles and giving glimpses of the deep blue sky through a spreading canopy of foliage. He says: "The plant was then in flower. When I passed that way a few months later the forest had disappeared." During the years 1863 to 1866, in Chittagong in Bengal the fruiting and death of bamboos caused great inconvenience due to the absence of wood suited for building purposes. In Canara on the west coast of India, in 1864, during a time of great scarcity of food, a general flowering of the bamboos occurred in the jungles. A very large number of persons, estimated at 50,000 came to collect the seed, each party remained ten to fourteen days, taking away enough for their own consumption during the monsoon months, as well as some for sale.

To come nearer home, a fair number of species have flowered and produced fruit in this country. *Phyllostachys bambusoides castilloni* did so in 1903 and 1904; many plants died. *P. nigra henonis* started flowering in 1878 and by 1906 all plants had died.

P. nigra is especially interesting as it flowered all over the world, in both hemispheres, from 1933 till 1935. From Kew comes the information—and I am grateful to MR. C. E. HUBBARD and to MR. W. M. CAMPBELL for their assistance in gathering together these details—that the plants of *P. nigra* were planted in the garden in 1891 and have since all died. This, together with the fact that a related species *P. puberula* is stated to have a life-cycle of sixty years, rather suggests that *P. nigra* has a similarly long life-cycle. *P. nigra* var. *punctata* flowered at Kew from 1900 to 1908.

P. aurea is the species of which we know most. Flowering in this country between 1901 and 1905, it again flowered in 1919–21. Then in 1935 reports came from all over the world of its flowering, and it therefore apparently has a life-cycle of about fifteen to sixteen years.

Among arundinarias, *A. simonii* flowered in Japan in 1875, and flowered in this country between 1877 and 1879, and again in 1903–7. All plants died. I hear that it flowered again at Kew in 1948. *A. simonii* var. *chino*, otherwise known as *Bambusa laydeckeri*, flowered in Japan from 1933 to 1934, and a young collected plant flowered in 1955. *Arundinaria marmorea* flowered in 1931 at Garstang, and in 1954 at Kew.

A. falconeri flowered in India in 1845 and 1846, and plants raised from the seeds then produced flowered in Europe in 1875 to 1877, and all died. It may be presumed it has a life-cycle of thirty to forty years as it flowered here again from 1929 onwards. *A. falcata* was flowering in this country in 1936, and also in Ireland, and the plants died. Other plants flowered at Kew in 1938 and 1951.

A. auricoma produces flowering culms from time to time, but the plants continue to live as only a few culms are affected each time.

A. japonica, "Metake", one of our most accommodating evergreens, flowered in 1872–5; it would appear that general flowering is again imminent as it flowered at Kew in 1951 and in Japan in 1952, and was again in flower in different gardens in 1956, including Batsford Park, which formerly belonged to the late LORD REDESDALE (W. FREEMAN-MITFORD), himself the writer of *The Bamboo Garden*, in 1896. Flowers were produced at Grayswood Hill, Surrey, in 1956.

Further records received from Kew are *A. graminea* (1948); *A. fastuosa* (Japan, 1951); *A. aristata* (1950); *A. macrosperma* (*A. gigantea*) (1948).

It is very extraordinary that when one species begins to flower, the plants over a very wide area all do the same. From the foregoing data it will be seen that all bamboos are not strictly monocarpic plants. Some appear to die, but others only lose their leaves or remain for a long time in a crippled condition. One hears of various remedies for keeping the plants alive after flowering, such as shortening the stems and mulching with suitable material and it has been proved that these measures do in some cases help the plants to continue their existence after their exhausting efforts.

The flowers themselves are in the form of open panicles, often many-flowered spikelets, and resemble those of grasses. The actual fruit may resemble that of maize or wheat, but in some of the tropical genera of the Old World they may in some species be as large as a pear.

There is an enormous amount of silica present in the culms, and the rapidity with which some bamboos grow is a matter of considerable interest. In SCHIMPER'S *Plant Geography* some enlightening figures are given for *Dendrocalamus giganteus* growing in the Botanical Garden at Buitenzorg, Java. It is very remarkable that the growth is much more rapid during the night than during the day. The measurements for four periods of twenty-four hours were: First day 10·5 cm., night 16 cm. Second day 5 cm., night 15 cm. Third day 8 cm., night 16 cm. Fourth day 8·5 cm., night 12·5 cm. The average increase per hour by day was 7·7 mm., or about $\frac{1}{3}$ inch, and by night 13 mm. or about $\frac{1}{2}$ inch. The greatest increase recorded in twenty-four hours was 57 cm. or roughly about 21 inches. We have no exact figures available for the British Isles, but apparently in such places as Fota Island, Co. Cork, and at Killarney Castle in Kerry, the young culms of *Phyllostachys mitis* will grow 2½ inches in twenty-four hours.

ECONOMIC VALUES

It is perhaps no exaggeration to say, that in the tropics nature bestowed no more useful, nor more beautiful gift on uncivilized man than the bamboo. Their qualities embrace great strength, rigid straightness and lightness, with abundance and easy means of propagation. Their suitability for many purposes without much labour and preparation are

reasons why they play a very important part, wherever they grow, in the life of mankind, supplying him with the means of making not only his essential requirements, but his numerous little luxuries.

They play an important part in the building of houses and bridges, while in the making of all kinds of household utensils they are of supreme value. It may perhaps be incredible that such an article as a knife can be made from a bamboo, but the amount of silica present in the culms of some species is so abundant and renders them so hard, that with the outer coating (when flattened, sharpened and used as a scythe) grass and even low shrubbery can be mown down quite well.

In the East, particularly in China, bamboo has been and, in fact, still is employed in the manufacture of paper, just as in former times the bark of *Edgworthia papyrifera* and *Daphne papyracea* was used in India, and *Cyperus papyrus* in Egypt. The culms are cut when quite green, and are scraped and cleaned, the coarse outer shavings being used for stuffing mattresses, etc.

Mention has already been made of the food value of the seed. In addition, the fresh young shoots are eaten as a vegetable like asparagus; they are also pickled or coated with sugar and used as a confection. In Sikkim the natives make a drink from the seeds in the same way as the seeds of *Eleusine coracana* are made into Murwa beer by pouring boiling water over the partially fermented grain.

Bamboos provide but one substance of medicinal use and this is 'Tabasheer", a siliceous concretion found in the joints of several species, but most abundant in *Melocanna bambusoides* or *Bambusa arundinacea*. At one time, in the East, tabasheer was regarded as a great and unfailing remedy for every ailment to which human flesh is prone.

It is not surprising, when we consider the multifarious uses for which they are suitable and the resultant veneration with which these plants would be regarded by grateful, simple people, to find that a great number of superstitions have grown around bamboos and that they are used in civic and religious celebrations. They are used as decoration and as furniture for the occasions.

Even in the provision of musical instruments the bamboo does not fail us. The Chinese make several kinds of flutes from the culms, and whistles for driving away evil spirits. Drums and tom-toms are made by stretching skin over the severed joint of a culm in the Malayan islands and there also is made a special invention, used in many of the islands, consisting of perforated culms; the wind performs the role of musician. A beautiful melody is emitted, sounds soft and liquid like the notes of a flute, others deep and full like the tones of an organ; FREEMAN-MITFORD thus describes such an instrument: ". . . Towards evening, when the fresh sea-borne breeze drives the burning stillness of the day before it, bringing to the poor washed-out natives a faint renewal of energy, weird and ghostly strains come floating upon the air. It is no mortal music, for Aeolus himself is the musician, rivalling the great God Pan of old . . ."

PLANTS AND PROBLEMS—XXXIV

ENDIVE

Question. I understand that a late sowing of endive provides an interesting salad for the early winter. Please could you give me some details in the cultivation of this crop.

Answer. Endive can be grown quite successfully from a sowing made in early July, which matures in early September. The seed should be sown in shallow drills 15 inches apart. The resulting seedlings should be thinned to 15 inches apart in the rows. In dry summers the plants will require watering. By the beginning of September the plants will be large enough to blanch, which can be achieved by tying up the plants with raffia or by placing tiles on top of the plants. When blanching it is essential to see that the plants are dry as any moisture will soon cause the plants to rot. Blanching will take about a week. For later supplies the plants should be lifted, when dry, and planted in a cold frame as endive is not hardy.

There are two types of endive which may be grown, the Batavian broad leaved and the green curled leaved.

CONTROL OF GROUND ELDER

Question. We have recently bought an old house in Byfleet where the herbaceous border is thick with ground elder. Can you please tell me how to deal with the weed in such a circumstance this spring? Also, how might it be eradicated in open ground where we intend to make a vegetable plot? Could some sort of chemical be used?

Answer. Where ground elder (*Aegopodium podagraria*) is firmly established in a border, the only really satisfactory means of eliminating it is to lift the herbaceous plants and plant these on a reserve piece of ground. Then the border can be methodically forked and as much as possible of the weed removed by hand. Throughout the summer this practice must be repeated whenever any new growth appears and if this is done thoroughly a control can be established by the autumn. Then the herbaceous plants can be replanted taking care, of course, to see that the weed is not reintroduced.

On open ground it is not easy to control ground elder by chemical means as in some cases the large quantities of herbicide needed will make the ground infertile for very considerable periods. In view of this we would recommend that a similar practice to that advocated above be adopted and as the weed appears during the summer it can be dealt with mostly during the course of normal cultivations. Often, in neglected gardens where the weed is rampant, the fertility of the soil is low and a generous manurial programme should be carried out in conjunction with the control.

DAMAGE BY BIRDS

Question. Can you tell me any method of preventing birds attacking fruit trees? I have tried spraying with alum but without any effect.

Answer. There is unfortunately no fully effective method of preventing damage by birds to growing plants. Research on this subject has been going on for some time but is hampered by our lack of basic knowledge concerning the habits and physiology of birds which is necessary for a full understanding of many of the puzzling features of the problem and for its eventual solution.

What is known so far about control methods may be summarized as follows:

Repellents. Many chemicals, including the much-recommended alum, have been tested, but none has been found to be an effective deterrent.

Scarers suffer from the disadvantage that birds soon learn that they are harmless and ignore them. They may be effective for a short time, however, and if different types are used in a daily rotation severe damage may be prevented. Glitterbangs or twisted aluminium strips coloured on one side may be used, but should be hung a few feet above or away from the plants so that the birds see them as they approach. Replicas of predatory animals such as cats or hawks may be used but their effectiveness is increased if kept constantly in motion, e.g. a stuffed hawk suspended from the rotating side-arm of a long pole, so that it appears to fly over the trees, etc. Rope-cartridges, timed to explode at irregular intervals, are quite effective but should not be used in built-up areas if one wishes to remain popular with one's neighbours. It should be noted that the efficiency of scarers on some hedge-dwelling birds such as bullfinches, is minimized by the presence of hedges and shrubs which act as a refuge from which birds immediately descend on the crops when the danger seems past.

Other methods. Black thread strung on sticks over plants will keep some birds, such as sparrows, at bay, but is useless against bullfinches and other species. Similarly wide-mesh netting is not to be recommended. It may, however, be worthwhile in some cases and it is certainly effective, to suspend a bird-proof net of fine mesh on frames over trees and other plants while they are susceptible to bird attack.

Apple and pear fruitlets may also be enclosed in muslin bags. This involves some trouble and work but may be worthwhile on small trees and cordons and where fruit is intended for exhibition. Some fruit should be left uncovered to act as decoys and as indicators of ripeness.

Apart from the above methods recourse may be back to shooting and trapping. The former is time-wasting and expensive and the latter not always effective. Reference should be made to the Protection of Birds Act, 1954, and subsequent Government Orders which prohibit the killing of many types of wild birds.

PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1956-7

Camellia × williamsii 'Pink Wave' A.M. January 22, 1957. The exhibitors of this hybrid state that it was raised in 1949 from seed collected off a plant of *Camellia × williamsii* 'J. C. Williams'. On the short flowering stems shown, the leaves were variable but tended to be rather narrow; on the upper surface they were a shiny light green and beneath a very pale green. Marginal serrations were small and close together. The flower was typical of the hybrid group. It was 3 inches across and coloured Rhodamine Pink (H.C.C. 527/2) with some pale flushes, while the back of a few outer petals were partially coloured Phlox Pink (H.C.C. 625/1). The corolla was made up of six petals and three petaloid appendages. Exhibited by Crown Estate Commissioners, The Great Park, Windsor, Berks.

Crocus chrysanthus 'Blue Giant' A.M. February 19, 1957. The fine blue of the perianth segments of this handsome crocus (Wistaria Blue, H.C.C. 640/2, shading to Wistaria Blue, H.C.C. 640/3), is well set off by the bright orange of the stamens and the deep yellow (Indian Yellow, H.C.C. 6/2) of the throat of the flower. This crocus, flowering as it does in mid-February, makes a valuable addition to the garden at a time of the year when little else is in bloom. Exhibited by Messrs. P. de Jager & Sons, Heiloo, Holland.

Helleborus macranthus A.M. February 5, 1957. Although a fine garden plant this species of hellebore is comparatively rare in cultivation. At one time it was known as *Helleborus niger* var. *angustifolius*. The flowers are borne on stout, green and crimson-freckled stems up to 12 inches high, with an occasional small bud in the axils of the two leafy bracts. Each flat flower is 3½ inches across and has a large cluster of pale golden stamens in the centre. The leaf is composed of nine leaflets, the largest of which is 6½ inches long and 2 inches across. Exhibited by Crown Estate Commissioners, The Great Park, Windsor, Berks.

Hymenocallis littoralis A.M. March 19, 1957. Synonymous with *Hymenocallis adnata*, and referred to in *Curtis's Botanical Magazine* as the "narrow-leaved seashore Hymenocallis", this striking amaryllid is a worthy subject for the warm greenhouse. It has long narrow somewhat fleshy leaves, and large umbels of white pleasantly fragrant flowers, which are carried on stout stems about 2½ feet in length. In the individual flowers, the six narrow and recurved perianth segments are ¼ inch wide and 3½ inches long. The stamens are united at the base into a deep wavy cup or corona, the free parts of the filaments are 2½ inches long, curved and slender, and bear brown versatile anthers. Exhibited by L. Maurice Mason, Esq., Talbot Manor, Fincham, King's Lynn, Norfolk.

Malus robusta A.M. January 22, 1957. In cultivation this tree is generally grown under the name of 'Red Siberian'. It is an admirable plant for the suburban garden as it never grows very large and, if necessary, can be reduced in size without any harm done, by judicious shortening of the longest shoots. As a garden plant its decorative value lies in its Blood Red fruits (H.C.C. 820/2). Annually the tree crops heavily and the fruits remain an ornamental feature when the season of the majority of trees grown for decorative fruits is long since over. Exhibited by Messrs. Barnham Nurseries Ltd., Barnham, Sussex.

Prunus incisa 'Praecox' A.M. January 22, 1947. This is an early-flowering variety of *Prunus incisa* which, itself, was given an Award of Merit on April 5, 1927. Clusters of small white flowers and pale pink buds appear on the ends of short twiggy shoots making the tree an attractive feature early in the year. Exhibited by Messrs. Hillier & Sons, West Hill Nurseries, Winchester.

Prunus kansuensis A.M. February 5, 1957. A small tree of value for its early-flowering habit. On the cut sprays exhibited the shoots were laden with pink buds which opened at irregular intervals along the stems to show small white flowers faintly tinged with pale pink. Exhibited by The Director, Royal Botanic Gardens, Kew, Richmond, Surrey.

Rhododendron mucronulatum F.C.C. January 22, 1957. A beautiful early-flowering species of vigorous habit from Korea, Japan, and Northern China. The flowers, which are about 1½ inches across, are of a rich purplish rose colour, and although flowering in January and February appear to suffer very little damage from frost. The leaves, which are deciduous, are about 3 inches long and 1½ inches broad. This species received an Award of Merit in 1925 (R.H.S. JOURNAL **50,** xxxix, 1925). Exhibited by Crown Estate Commissioners, The Great Park, Windsor, Berks.

Viburnum 'Anne Russell' A.M. March 19, 1957. This handsome flowering shrub is a hybrid raised by the exhibitors from the intentional crossing of *Viburnum carlesii* with *Viburnum* × *burkwoodii* in 1951. The growth of *Viburnum* 'Anne Russell' is sturdier and more upright than that of *V. carlesii*, yet the inflorescences are not as heavy as those of *V.* × *carlcephalum*. The pink (Mandarin Red, H.C.C. 17/3) buds open to fragrant white flowers. These are ⅝ inch wide, and are carried on reddish stalks in close clusters some 3 inches across. Exhibited by Messrs. L. R. Russell Ltd., Richmond Nurseries, Windlesham, Surrey.

ORCHIDS

Cymbidium (Balkis g.) 'Arctic Spring' A.M. March 19, 1957. This cultivar is yet another with the very popular *C.* Alexanderi grex as one parent, whilst *C.* 'Rosanna' is the other. Nine flowers were borne on the spike exhibited and each flower is very broad, being about 4½ inches wide by 3 inches deep. As is to be expected the general white colour is

dominant but a slight pink flush does suffuse through from the reverse side. The dorsal tepal is markedly arched over the labellum and the latter tepal has a scalloped margin. The labellum also has a pale pink flush near the apex and purple spots towards the sides. A purple column is noticeable. Exhibited by Messrs. Black & Flory Ltd., Slough.

Cymbidium (Burgundian g.) 'Long Island' A.M. March 19, 1957. The parents are *C.* 'Remus' and *C.* (Babylon g.) 'Castle Hill'. Upon the plant exhibited were eight flowers of a deep rosy-pink colour with darker longitudinal lines running down the tepals. The dorsal has an incurved and mucronate apex. The smaller laterals are rather paler, being noticeably whiter towards the apex. The labellum has a whitish throat while towards the main outer margin are dark reddish blotches. Exhibited by H. W. B. Schroder, Esq., Dell Park, Englefield Green.

Cymbidium (Euphrates g.) 'Kara Su' A.M. March 19, 1957. The parentage is *C.* 'Cassandra' × *C.* (Babylon g.) 'Castle Hill'. Upon the plant exhibited was a curved spike bearing eleven closely spaced flowers. Individual flowers are 5 inches across and 3 inches deep. The tepals are pale pink with longitudinal streaks of a deeper shade. The laterals of the inner whorl are rather lighter in colour with a very narrow white margin. The labellum has dark red blotches concentrated towards the lower margin. Exhibited by H. W. B. Schroder, Esq., Dell Park, Englefield Green.

Cymbidium (Flavian g.) 'Latour' A.M. March 19, 1957. A rather unusual cultivar which was exhibited with a curved spike bearing eleven rather small flowers. The basic colour is a dull, dark purple, with lighter streaks running down the tepals longitudinally. The outer whorl of tepals is incurved, whilst the laterals of the inner whorl are recurved. The labellum has a whitish area inside the throat, and towards the apex are dark velvet-purple patches. The parentage is *C.* 'Flare' × *C.* 'Remus', and the plant was exhibited by H. W. B. Schroder, Esq., Dell Park, Englefield Green.

Cymbidium (Lady Moxham g.) 'Kingsworthy' A.M. March 19, 1957. This cultivar comes from a grex which has produced other awarded plants. This latest one to receive an award had a curving spike bearing nine flowers. The general deep rose-pink shade of the tepals is enhanced by darker spots towards the base. The labellum has a very narrow white edge. The spots on this tepal are spaced, unlike the majority of cymbidiums, and are dark purple. A yellow column surmounts the labellum. The parents are *C.* 'Sunrise' and *C.* (Alexanderi g.) 'Westonbirt'. Exhibited by R. M. Elias, Esq., Kingsworthy, 7 Frognall Way, Hampstead.

Cypripedium (W. N. Evans g.) 'Brilliance' A.M. March 19, 1957. This cultivar was obtained by crossing *C.* 'Floralies' with *C.* 'Kay Kay'. The flower exhibited was 4½ inches by 4 inches. The tepals are incurved and have a dominant purple colour. The dorsal is glossy purple with a broad white margin. The laterals have a similar purple colour superimposed upon a yellowish background. The

labellum is a deep glossy purple. 'Brilliance' is the third cultivar of the grex to obtain an award and was exhibited by Messrs. Charlesworth & Co. Ltd., Haywards Heath.

Dendrobium superbum A.M. March 19, 1957. This is a handsome species native to the Philippines. It was shown in a wooden container which allowed the large pendulous spike to hang freely. This spike bore sixteen flowers, arising in pairs from the peduncle. Individual flowers are 3 inches by 3 inches, with a general mauve-pink colour deepening to a magenta-purple throat in the labellum. The tepals of the outer whorl are twisted and more or less lanceolate. The inner laterals are ovate and the labellum has a funnel-shaped throat and is strongly recurved at the apex. Exhibited by H. Wichmann, Esq., Bahnhof Strasse 34, Celle, Germany.

Miltonia (Limelight g.) 'Stonehurst' A.M. March 19, 1957. A large-flowered miltonia cultivar with individual flowers, 5 inches deep by 3½ inches wide. The plant exhibited bore five blooms, and the main colour is pale pink. The upper tepals are recurved, and the laterals of the inner whorl possess a deep purple blotch. The large flat labellum is strongly bifid and has the finger-like markings radiating from the centre which are seen on many miltonias. These markings are rose-coloured and in addition the central area is splashed with orange. The parentage is *M.* 'Armstrongii' and *M.* 'Lycaena'. Exhibited by R. Strauss, Esq., Stonehurst, Sussex.

× **Odontioda (Lita g.) 'Whatcroft Hall' A.M.** March 19, 1957. The parents are *O.* 'Marie Antoinette' and *O.* 'Pittiae'. The flower colour is a dark purplish-red and upon most tepals were a few white spots. The tepals are also recurved. The labellum becomes paler towards the apex, and fades through mauve to white in this region. The tepal is deeply bifid and also has a jagged yellow crest in its upper part. Exhibited by Dr. W. Stirling, Whatcroft Hall, Nr. Northwich.

PEAR

Pear 'Laxton's Superb' A.M. August 28, 1956. Parentage 'Beurré Superfin' × 'Williams' Bon Chrêtien'. Raised by Messrs. Laxton Bros. (Bedford) Ltd., Bedford, in 1901 and introduced by them in 1913. Planted in the National Fruit Trials in 1923. Season mid August. Approximately conical in shape but with a very uneven and irregularly ribbed surface. Colour pale yellow sometimes with pinkish or brick-red cheek. Flesh white, melting and very juicy with excellent flavour and no grittiness. Eye medium sized and open in small shallow basin. Stalk thick, varying from ½ inch to 1¼ inches in length, sometimes inserted at angle. Very short season and must be picked before turning yellow or flesh becomes mealy. Tree quite vigorous and good cropper. Late flowering; good pollinator for 'Doyenné du Comice'. Exhibited by The Director, R.H.S. Gardens, Wisley.

WISLEY TRIALS 1956–7

SOLIDAGOES

A collection of solidagoes has been maintained at Wisley since 1948 and is inspected periodically by a sub-committee of the Floral Committee A. The sub-committee judged the collection on August 8, 1956, and on its recommendation the Council of The Royal Horticultural Society has made the following awards to solidagoes.

The number in brackets after description of the variety was that under which it was grown in the trial.

GOLDENMOSA. (Raised and introduced by the late Mr. H. Walkden and sent by both Messrs. Burleydam Nurseries (Chester) Ltd., Little Sutton, Wirral, Cheshire and Messrs. Perry's Hardy Plant Farm, Enfield, Middlesex.) **A.M.** August 8, 1956. Plant 2¾ feet high, 2 feet spread, compact, bushy and very free flowering; flowering spikes spread horizontally, form graceful sprays; flowers ⅓ inch diameter, double, Lemon Yellow (H.C.C. 4) with centre deepening to Buttercup Yellow (H.C.C. 5) (**H.C.** 1949). [8]

GOLDENLORA. (Raised by the late Mr. H. Walkden and sent by Miss A. Walkden, The Raft, Derbyshire Road, Sale, Manchester.) **H.C.** August 8, 1956. Plant 3 feet high, 2 feet spread, compact, bushy, very free flowering; flowering spikes spread horizontally, freely divided; flowers ⅓ inch diameter, semi-double, Lemon Yellow (H.C.C. 4). [13]

LEDSHAM. (Raised by the late Mr. H. Walkden and sent by Miss A. Walkden.) **H.C.** August 8, 1956. Plant 2½ feet high, 2 feet spread, compact, bushy, very free flowering; flowering spikes spread horizontally, freely divided; flowers ⅜ inch diameter, double, Sulphur Yellow (H.C.C. 1/2), centre Aureolin (H.C.C. 3). [27]

CELERIAC

Sixteen stocks of celeriac were received for trial at Wisley in 1956. The trial was sown, under glass, on March 19, 1956, the resulting seedlings were pricked off into boxes on April 9 and the trial was planted in the open ground on June 8. The plants were spaced 15 inches apart in rows 18 inches apart. As the plants grew the lower leaves were removed to encourage the production of a good-sized swollen stem.

The trial was inspected by a sub-committee of the Fruit and Vegetable Committee on October 19, 1956, and on its recommendation the Council of The Royal Horticultural Society has made the following awards to celeriac.

The number in brackets after the description of the variety was that under which it was grown in the trial.

ALABASTER. (Raised, introduced and sent by Messrs. L. Daehnfeldt Ltd., 75, Vestergade, Odense, Denmark.) **A.M.** October 19, 1956. Plant 21 inches high; leaves few, dark green; stalk ribbed, dark green tinged red; stem 4½ inches deep, 4¾ inches diameter, broad shouldered, flat based. [3]

GIANT PRAGUE. (Raised, introduced and sent by Messrs. A. Hansen, Kastrup, Amager, Denmark.) **A.M.** October 19, 1956. Plant 28 inches high; leaves few, bright dark green; stalk ribbed, green; stem 4 inches deep, 4½ inches diameter, broad shouldered, flat based, very regular in shape. [1]

GLOBUS. (Introduced and sent by Messrs. G. R. Vatter Ltd., Barenplatz 2, Bern, Switzerland.) **A.M.** October 19, 1956. Plant 21 inches high,

leaves few, dark green; stalk ribbed, green tinged red; stem 3¾ inches deep, 4½ inches diameter, a very rounded stem. [11]

ALABASTER. (Raised, introduced and sent by Messrs. A. Hansen.) **H.C.** October 19, 1956. Plant 20 inches high; leaves few, dark green; stalk ribbed, dark green tinged red; stem 4½ inches deep, 5 inches diameter, flat-based tapering towards top. [4]

ALABASTER. (Raised, introduced and sent by Messrs. J. E. Ohlsens Enke, Linnesgade 14, Copenhagen, Denmark.) **H.C.** October 19, 1956. Plant 24 inches high; leaves few, dark green; stalk ribbed green, tinged bronze; stem 4$\frac{3}{10}$ inches deep, 5 inches diameter, broad-shouldered, flat-based. [5]

BALDER. (Raised, introduced and sent by Messrs. A. Hansen.) **H.C.** October 19, 1956. Plant 23 inches high, leaves few, dark green; stalk ribbed, green, tinged bronze; stem 4 inches deep, 5½ inches diameter, broad-shouldered, flat-based. [6]

TELLUS. (Raised by Weibullsholm Plant Breeding Institute, introduced and sent by Messrs. W. Weibull Co. Ltd., Landskrona, Sweden.) **H.C.** October 19, 1956. Plant 24 inches high; leaves few, dark green; stalk ribbed, green, tinged red; stem 4⅜ inches deep, 4⅜ inches diameter; rounded top, flat-based. [8]

LETTUCES AND MELONS UNDER FRAMES

In 1955 a unit of Dutch lights and frames was established on the Vegetable Trial Grounds and consists of 130 Dutch lights and 100 continuous cold-frames. The wooden Dutch lights, each measuring 4 feet 11 inches by 2 feet 6¾ inches, are supported on a sectional concrete surround 9 inches high at the back and 4½ inches high in the front. Half the lights are constructed of imported softwood, pressure treated with preservatives, and the other half of imported western red cedar. Each continuous cold-frame, made of steel, is 6 feet 9 inches across by 1 foot 9 inches wide by 1 foot 8 inches high at the centre. Artificial heat is not supplied to the frames nor are they placed over a hot-bed of manure. During 1956 trials of lettuces and melons were grown under these frames.

LETTUCES

Seventy-three stocks of lettuces were received for trial at Wisley. The trial was sown on October 11, 1955, the seedlings pricked out on November 5 and the young plants moved to their final quarters on December 12. A second sowing was made a fortnight later in case the plants resulting from the first sowing grew too fast. The early planting, at 8½ inches square, enabled the young seedlings to become well established before the onset of the severe weather in February. Air was admitted on all possible occasions to the frames in early stages to encourage the production of sturdy plants. During the severe weather of February it was necessary to cover the frames with a thick layer of straw in order to prevent the plants freezing. The plants grew away well during March and came to maturity during April.

The trial was inspected by a sub-committee of the Fruit and Vegetable Committee on April 16 and 23, 1956, and on its recommendation the Council of The Royal Horticultural Society made the following awards to lettuces as varieties suitable for cultivation under Dutch lights and frames.

The number in brackets after the description of the variety was that under which it was grown in the trial.

ATTRACTIE IMPROVED. (Introduced and sent by Messrs. Cooper, Taber & Co. Ltd., 90 Southwark Street, London, S.E.1.) **A.M.** April 23, 1956. Cabbage type. Plant 6 inches high, 7 inches across compact, upright; leaves medium green, blistered; heads firm, maturing evenly, fit to cut on April 27. [63]

CHESHUNT EARLY GIANT. (Raised and introduced by Dr. W. F, Bewley, C.B.E., D.Sc., V.M.H., Glasshouse Crops Research Institute, Worthing Road, Rustington, Little Hampton, Sussex and sent by Messrs. D. T. Brown & Co. Ltd., Poulton-le-Fylde, Lancashire.) **A.M.** April 16, 1956. Cabbage type. Plant 5½ inches high, 8 inches across, very compact; leaves bright medium green, blistered; heads firm, maturing evenly, fit to cut on April 11. [23]

CHESHUNT 5B IMPROVED. (Raised by Dr. W. F. Bewley, C.B.E., D.Sc., V.M.H., introduced and sent by Messrs. Watkins & Simpson Ltd., 26–29 Drury Lane, Covent Garden, London, W.C.2.) **A.M.** April 16, 1956. Cabbage type. Plant 5 inches high, 8 inches across, very compact; leaves bright medium green, flat to slightly blistered; heads firm, maturing evenly, fit to cut on April 11. [21]

EARLY FIRMHEART FORCING. (Raised, introduced and sent by Messrs. L. Clause S.A.) **A.M.** April 16, 1956. Cabbage type. Plant 6 inches high, 8 inches across, compact; leaves medium green, slightly blistered; heads firm, maturing evenly, fit to cut on April 16. [26]

EARLY FRENCH FRAME CLAUDIA. (Raised, introduced and sent by Messrs. L. Clause S.A., Bretigny-sur-Orge, France.) **A.M.** April 16, 1956. Cabbage type. Plant 4 inches high, 8 inches across, compact; leaves medium green, flat to slightly blistered; heads firm, maturing evenly, fit to cut on April 16. [14]

EARLY FRENCH FRAME RESELECTED. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd.) **A.M.** April 16, 1956. Cabbage type. Plant 7 inches high, 8 inches across, compact, upright; leaves bright medium green, blistered; heads firm, maturing evenly, fit to cut on April 16. [12]

EARLY WONDER. (Introduced and sent by Messrs. Hurst & Son Ltd., Kelvedon House, 60–64 Artillery Lane, London, E.1.) **A.M.** April 16, 1956. Cabbage type. Plant 5 inches high, 8 inches across, compact; leaves medium green, blistered and slightly crumpled; heads firm, maturing evenly, fit to cut on April 10. [33]

FORCING MILDEW RESISTING. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd.) **A.M.** April 16, 1956. Cabbage type. Plant 6½ inches high, 8 inches across, compact; leaves medium green, slightly blistered; heads firm, maturing evenly fit to cut on April 20. [28]

GREETINGS OF SPRING. (Introduced and sent by Messrs. G. R. Vatter Ltd., Bern, Switzerland.) **A.M.** April 16, 1956. Plant 6 inches high, 8 inches across, compact; leaves medium green, blistered, slightly crumpled; heads firm, maturing evenly, fit to cut on April 18. [34]

LOOS TENNIS BALL. (Raised, introduced and sent by Messrs. L. Clause S.A.) **A.M.** April 23, 1956. Cabbage type. Plant 6½ inches high, 11 inches across, compact, upright; leaves bright medium green, slightly blistered; heads firm, maturing evenly, fit to cut on April 23. [11]

MAY KING FORCING STELLA. (Raised, introduced and sent by Messrs. L. Clause S.A.) **A.M.** April 23, 1956. Cabbage type. Plant 6 inches high, 12 inches across, compact, upright; leaves bright medium green, blistered; heads firm, maturing evenly, fit to cut on April 23. [38]

MAY PRINCESS. (Raised and introduced by Messrs. A. L. Tozer Ltd., Pyports, Church Street, Cobham, Surrey and sent by Messrs. W. Deal & Son Ltd., Kelvedon, Essex.) **A.M.** April 23, 1956. Cabbage type. Plant 6 inches high, 10½ inches across, compact, upright; leaves medium green, blistered; heads firm, fit to cut on April 23. [56]

MAY PRINCESS. (Raised by Dr. C. D. R. Dawson, Ph.D., introduced and sent by Messrs. A. L. Tozer Ltd.) **A.M.** April 23, 1956. Cabbage type. Plant 7 inches high, 10 inches across, compact, upright; leaves medium green, blistered; heads firm, fit to cut on April 23. [57]

PRIMA VERA. (Raised, introduced and sent by Messrs. A. R. Zwaan & Son Ltd., Voorburg, The Hague, Holland.) **A.M.** April 23, 1956. Cabbage type. Plant 6 inches high, 10 inches across, compact, upright; leaves medium green, blistered; heads firm, fit to cut on April 22. [61]

PROGRESS. (Raised, introduced and sent by Messrs. A. Hansen, Kastrup, Amager, Denmark.) **A.M.** April 16, 1956. Cabbage type. Plant 5 inches high, 8 inches across, compact; leaves light green, slightly blistered; heads firm, fit to cut on April 16. [3]

RESISTENT. (Raised, introduced and sent by Messrs. Sluis Bros. Ltd., Enkhuizen, Holland.) **A.M.** April 23, 1956. Cabbage type. Plant 5 inches high, 11 inches across, compact; leaves medium green, blistered; heads firm, fit to cut on April 23. [50]

TROCADERO IMPROVED. (Introduced and sent by Messrs. Hurst & Son Ltd.) **A.M.** April 23, 1956. Cabbage type. Plant 6 inches high, 10 inches across, compact and upright; leaves medium green, blistered; heads firm, fit to cut on April 27. [62]

URANIA. (Raised by Weibullsholm Plant Breeding Institute, introduced and sent by Messrs. W. Weibull Ltd., Landskrona, Sweden.) **A.M.** April 16, 1956. Cabbage type. Plant 4 inches high, 8 inches across, very compact; leaves bright medium green, blistered; heads firm, fit to cut on April 11. [25]

VICTORIA. (Raised, introduced and sent by Messrs. L. Daehnfeldt Ltd., Odense, Denmark.) **A.M.** April 23, 1956. Cabbage type. Plant 6 inches high, 12 inches across, compact, upright; leaves bright medium green, blistered; heads firm, fit to cut on April 24. [53]

ATTRACTION. (Introduced and sent by Messrs. G. R. Vatter Ltd.) **H.C.** April 23, 1956. Cabbage type. Plant 7 inches high, 10 inches across, compact, upright; leaves medium green, blistered; heads firm, fit to cut on April 21. [65]

BÖTTNER'S FORCING. (Raised, introduced and sent by Messrs. L. Daehnfeldt Ltd.) **H.C.** April 16, 1956. Cabbage type. Plant 6 inches high, 8 inches across, compact and upright; leaves medium green, crumpled; heads firm, fit to cut on April 14. [8]

CHESHUNT 5B. (Raised, introduced and sent by Messrs. L. Clause S.A.) **H.C.** April 16, 1956. Cabbage type. Plant 4½ inches high, 8 inches across, very compact; leaves bright medium green, blistered; heads firm, fit to cut on April 11. [18]

FRAME QUEEN. (Raised, introduced and sent by Messrs. A. R. Zwaan & Son Ltd.) **H.C.** April 23, 1956. Cabbage type. Plant 7 inches high, 9 inches across, compact and upright; leaves bright medium green, slightly blistered; heads firm, fit to cut on April 22. [15]

GOLDEN ROSE. (Raised, introduced and sent by Messrs. L. Clause S.A.) **H.C.** April 16, 1956. Cabbage type. Plant 5 inches high, 8 inches

across, compact; leaves medium green, blistered; heads firm, fit to cut on April 16. [32]

GOTTE À FORCER IMPROVED. (Raised by Mr. M. Driancourt, introduced and sent by Messrs. Watkins & Simpson Ltd.) **H.C.** April 16, 1956. Plant 5 inches high, 8 inches across, very compact; leaves bright medium green, slightly blistered; heads firm, fit to cut on April 16. [27]

HERALD. (Raised, introduced and sent by Messrs. Sluis Bros. Ltd.) **H.C.** April 23, 1956. Cabbage type. Plant 7½ inches high, 12 inches across, compact; leaves bright medium green, blistered; heads firm, fit to cut on April 22. [55]

MAY KING. (Raised, introduced and sent by Messrs. L. Daehnfeldt Ltd.) **H.C.** April 23, 1956. Cabbage type. Plant 7½ inches high, 11½ inches across, compact, upright; leaves bright medium green, blistered; heads firm, fit to cut on April 23. [40]

MAY KING. (Raised, introduced and sent by Messrs. A. Hansen.) **H.C.** April 23, 1956. Cabbage type. Plant 7½ inches high, 12½ inches across, compact, upright; leaves bright medium green, blistered; heads firm, fit to cut on April 23. [36]

MAY KING SELECTED. (Raised, introduced and sent by Messrs. W. Deal & Son Ltd.) **H.C.** April 23, 1956. Cabbage type. Plant 6½ inches high, 12 inches across, compact, upright; leaves bright medium green, blistered; heads firm, fit to cut on April 23. [41]

MAY QUEEN. (Sent by Messrs. J. L. Clucas Ltd., Ormskirk, Lancashire.) **H.C.** April 23, 1956. Cabbage type. Plant 6 inches high, 11½ inches across, compact, upright; leaves bright medium green, blistered; heads firm, fit to cut on April 23. [43]

MAY QUEEN. (Raised and sent by Messrs. Co-operative Zaaizaadvereeniging West Friesland W.A., Wijdenes, Holland.) **H.C.** April 23, 1956. Plant 6½ inches high, 12½ inches across, compact, upright; leaves bright medium green, blistered; heads firm, fit to cut on April 23. [44]

PROGRESS. (Raised, introduced and sent by Messrs. L. Daehnfeldt Ltd.) **H.C.** April 16, 1956. Plant 4 inches high, 8 inches across, very compact; leaves bright medium green, slightly blistered; heads firm, fit to cut on April 16. [4]

SPRING FAVOURITE. (Raised, introduced and sent by Messrs. Sluis Bros. Ltd.) **H.C.** April 23, 1956. Plant 6 inches high, 10½ inches across, compact, upright; leaves bright medium green, blistered; heads firm, fit to cut on April 23. [52]

VICTORIA. (Introduced and sent by Messrs. G. R. Vatter Ltd.) **H.C.** April 23, 1956. Plant 6 inches high, 10 inches across, compact, upright leaves medium green, blistered; heads firm, fit to cut on April 23. [54]

MELONS

Twenty stocks of melons were received for trial at Wisley. The trial was sown on April 26, 1956. Two seeds were placed in each pot and the resulting seedlings were thinned to one in each pot. The plants were kept in a warm greenhouse until May 19 when they were set out in the frames. Of each stock eight plants were grown under Dutch lights and eight under frames, two plants per light or frame. The plants were stopped as necessary and pollination was carried out in an endeavour to produce two fruits per plant, but due to the cold, wet summer this was not possible in all cases (Fig. 81).

In spite of this weather the fruits, once set, grew well and thus it was possible for a sub-committee of the Fruit and Vegetable Committee to inspect the trial on August 30, 1956, and on its recommendation the Council of The Royal Horticultural Society made the following awards to melons as varieties suitable for cultivation under Dutch lights and frames.

The number in brackets after the description of the variety was that under which it was grown in the trial.

COPENHAGEN MARKET. (Raised, introduced and sent by Messrs. A. Hansen, Kastrup, Amager, Holland.) **A.M.** August 30, 1956. Plant vigorous; leaves light yellowish-green, rough; fruits 5¾ inches long, 5 inches diameter, symmetrical, slightly ridged, not netted, skin pale yellow, flesh pale salmon-orange; flavour fair; matured last week in August. [20]

DELICIOUS. (Raised, introduced and sent by A. B. Murray, Esq., 25 Cliff Path, Sandown, Isle of Wight.) **A.M.** August 30, 1956. Plant vigorous; leaves yellowish-green, rough; fruits 5½ inches long, 5 inches diameter, symmetrical, ridged, netted, skin orange with white netting, flesh pale orange; flavour good; matured last week in August. [6]

TITBIT. (Raised, introduced and sent by Messrs. Erfurter Samenzucht, Niederwalluf/Rhg., Germany.) **A.M.** August 30, 1956. Plant vigorous; leaves light yellowish-green, rough; fruits 5¼ inches long, 5 inches diameter, symmetrical, not ridged, netted, skin greenish-yellow, flesh pale salmon-orange; flavour good, matured first week in September. [13]

BELLEVUE. (Raised, introduced and sent by Messrs. J. E. Ohlsens Enke, Copenhagen, Denmark.) **H.C.** August 30, 1956. Plant vigorous; leaves green, rough; fruits 6¼ inches long, 5½ inches diameter, symmetrical, ridged, not netted, skin pale yellow, flesh pale salmon-orange; flavour good; matured last week in August. [16]

TIGER. (Raised, introduced and sent by Messrs. Gebr. van den Berg N.V., Naaldwijk, Holland.) **H.C.** August 30, 1956. Plant vigorous; leaves pale yellowish green, rough; fruits 6 inches long, $5\frac{3}{10}$ inches diameter, symmetrical, ridged, netted, skin yellowish blotched greenish-orange, flesh bright orange; flavour good; matured first week in September. [7]

TIGER RESELECTED. (Sent by Messrs. A. L. Tozer Ltd., Pyports, Church Street, Cobham, Surrey.) **H.C.** August 30, 1956. Plant vigorous; leaves pale yellowish green, roughish; fruits 5½ inches long, 4⅝ inches diameter, symmetrical, ridged, netted, skin yellow blotched dark yellowish-brown; flesh deep orange; flavour good; matured first week in September. [5]

WEST. (Raised by Mr. West, introduced and sent by Messrs. L. Daehnfeldt Ltd., 75 Vestergade, Odense, Denmark.) **H.C.** August 30, 1956. Plant vigorous; leaves green, rough; fruits 7 inches long, 5½ inches diameter, symmetrical, slightly ridged, not netted, skin yellowish-salmon, flesh pale salmon-orange; flavour fair; matured in third week in August. [15]

KALE

Twenty-one stocks of kale were received in 1955 for trial at Wisley. The trial was sown in 1955 but the hard winter of 1955–6 damaged the plants so that it was not possible to judge them in the spring of 1956. However the trial was sown again on May 22, 1956, and planted on July 3. The plants were set out 2½ feet square and made satisfactory growth.

The trial was inspected by a sub-committee of the Fruit and Vegetable Committee on March 1, 1957, and on its recommendation the Council of The Royal Horticultural Society has made the following awards to kale.

The number in brackets after the description of the variety was that under which it was grown in the trial.

GREEN CURLED. (Raised, introduced and sent by the Co-operative Zaaizaadvereniging West Friesland W.A., Wijdenes, Holland.) **A.M.** March 1, 1957. Plant 2 feet 7 inches high, 1 foot 5 inches across, sprouting variety; leaves 11 inches long, 4 inches wide, cut and moss curled, light yellowish-green. [6]

VICTORIA. (Raised, introduced and sent by Messrs. Dobbie & Co. Ltd., Edinburgh 7.) **A.M.** March 1, 1957. Plant 1 foot 11 inches high, 1 foot 9 inches across, sprouting variety; leaves 9½ inches long, 5 inches wide, cut and moss curled, light yellowish-green. [7]

ONIONS

Eighty-two stocks of onion were received for trial in 1956. The trial was sown on March 8, 1956, after the seed had been treated with 50 per cent Dieldrin at the rate of 1½ ounces per pound of seed. The seed was sown in shallow drills 1 foot apart, the rate of sowing being governed by the percentage germination of each sample as stated by the sender. The trial grew away well, and such thinning as was necessary was carried out in mid-May. A heavy fall of rain in late July caused a certain portion of the trial to be flooded and some thirty stocks did not produce satisfactory results and will be grown again in 1957.

The remainder of the trial, some fifty-two stocks, was inspected by a sub-committee of the Fruit and Vegetable Committee on October 19, 1956, and on its recommendation the Council of The Royal Horticultural Society has made the following awards to onions as varieties suitable for sowing in the spring.

The number in brackets after the description of the variety was that under which it was grown in the trial.

CLUSEED LANCASTRIAN. (Raised by Mr. A. A. Clucas, introduced and sent by Messrs. J. L. Clucas Ltd., Ormskirk, Lancashire.) **F.C.C.** October 18, 1956. Bulbs $3\frac{7}{10}$ inches diameter, $3\frac{7}{10}$ inches deep, globular, ten bulbs weighed 6 lb. 1½ oz., outer skin very pale straw-yellow; keeping qualities fair; a very even stock of large bulbs. [67]

BOLA. (Raised, introduced and sent by Messrs. Jacob Jong Seed Co., Noordscharwoude, Holland.) **A.M.** October 19, 1956. Bulbs $3\frac{3}{5}$ inches diameter, 3 inches deep, slightly flattened globe, ten bulbs weighed 5 lb. 13 oz., outer skin straw-brown, keeping qualities good. [14]

GLOBE. (Raised, introduced and sent by Messrs. Sutton & Sons Ltd., Reading, Berkshire.) **A.M.** October 19, 1956. Bulbs 3 inches diameter, 3 inches deep, globular, ten bulbs weighed 3 lb. 10 oz., outer skin pale straw-brown, keeping qualities fair. [46]

GOLDEN BALL. (Raised, introduced and sent by Messrs. Nutting & Sons Ltd., Merstham, Surrey.) **A.M.** October 19, 1956. Bulbs $3\frac{1}{5}$ inches diameter, $2\frac{7}{10}$ inches deep, slightly flattened globe, ten bulbs weighed 4 lb. 6 oz., outer skin pale straw-brown, keeping qualities good. [47]

LANGENDIJKER FLAT YELLOW. (Sent by Messrs. Jacob Jong Seed Co.) **A.M.** October 19, 1956. Bulbs $3\frac{4}{5}$ inches diameter, $2\frac{2}{5}$ inches deep, flat-round, ten bulbs weighed 5 lb. 9½ oz., outer skin straw-brown, keeping qualities good. [4]

RECORD. (Raised, introduced and sent by Messrs. Carter's Tested Seeds Ltd., Raynes Park, London, S.W.20.) **A.M.** October 19, 1956. Bulbs $3\frac{3}{16}$ inches diameter, $3\frac{1}{8}$ inches deep, globular; ten bulbs weighed 5 lb. $3\frac{1}{2}$ oz., pale straw-yellow, keeping qualities fair. [63]

AILSA CRAIG SELECTED. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd., 26–29 Drury Lane, Covent Garden, London, W.C.2.) **H.C.** October 19, 1956. Bulbs $3\frac{1}{16}$ inches diameter, 3 inches deep, globular, ten bulbs weighed 4 lb. 10 oz., brown tinged red, keeping qualities fairly good. [60]

BRIGHAM YELLOW GLOBE. (Raised, introduced and sent by Messrs. Ferry Morse Seed Co., P.O. Box 967, Mountain View, California, U.S.A.) **H.C.** October 19, 1956. Bulbs $2\frac{5}{8}$ inches diameter, $2\frac{7}{16}$ inches deep, globular, ten bulbs weighed 3 lb. 9 oz., pale brown, keeping qualities fairly good. [45]

DOWNING'S YELLOW GLOBE. (Raised, introduced and sent by Messrs. Ferry-Morse Seed Co.) **H.C.** October 19, 1956. Bulbs $3\frac{3}{8}$ inches diameter, $2\frac{3}{8}$ inches deep, flat-round, ten bulbs weighed 5 lb. $\frac{1}{2}$ oz., brown, keeping qualities fairly good. [7]

EARLY HARVEST. (Raised and sent by Messrs. Dessert Seed Co., P.O. Box 181, El Centro, California, U.S.A., and introduced by United States Department of Agriculture.) **H.C.** October 19, 1956. Bulbs $3\frac{3}{16}$ inches diameter, 3 inches deep, flattened globe, 10 bulbs weighed 4 lb. 14 oz., pale brown, keeping qualities fair. [71]

FAVORIET. (Raised, introduced and sent by Messrs. Wed. P. de Jongh Ltd., Goes, Holland.) **H.C.** October 19, 1956. Bulbs $3\frac{1}{8}$ inches diameter, $3\frac{3}{8}$ inches deep, slightly flattened globe, ten bulbs weighed 5 lb. 4 oz., deep straw-brown, keeping qualities good. [13]

KELSAE EXHIBITION. (Raised, introduced and sent by Messrs. Laing & Mather Ltd., Kelso, Scotland.) **H.C.** October 19, 1956. Bulbs 3 inches diameter, $3\frac{7}{16}$ inches deep, coconut shaped, ten bulbs weighed 5 lb. $11\frac{1}{2}$ oz., pale straw-yellow, keeping qualities fair. [65]

LONG KEEPING. (Raised, introduced and sent by Messrs. Sutton & Sons Ltd.) **H.C.** October 19, 1956. Bulbs 3 inches diameter, $3\frac{3}{16}$ inches deep, flagon shaped, ten bulbs weighed 3 lb. 10 oz., pale reddish-brown, keeping qualities fairly good. [69]

RYNSBURGER. (Raised, introduced and sent by Messrs. Bakker Bros., Noordscharwoude, Holland.) **H.C.** October 19, 1956. Bulbs $3\frac{3}{16}$ inches diameter, $3\frac{1}{16}$ inches deep, globular, ten bulbs weighed 5 lb. $5\frac{1}{2}$ oz., straw-brown, keeping qualities good. [11]

RYNSBURGER YELLOW GLOBE. (Introduced and sent by Messrs. Oudijk Bros., Waddinxveen, Holland.) **H.C.** October 19, 1956. Bulbs $3\frac{3}{8}$ inches diameter, $2\frac{3}{8}$ inches deep, flattened globe, ten bulbs weighed 6 lb. 2 oz., slightly greenish straw-yellow, keeping qualities fairly good. [8]

WROXTON SELECTED. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd.) **H.C.** October 19, 1956. Bulbs $3\frac{3}{8}$ inches diameter, $2\frac{7}{16}$ inches deep, flattened globe, ten bulbs weighed 4 lb. 10 oz., straw-yellow, keeping qualities fair. [38]

BOOK NOTES

"The Camellia." Edited by Beryl Leslie Urquhart. 50 pp. + 20 coloured plates by Paul Jones and Raymond Booth. (The Leslie Urquhart Press.) 75*s*.

The publication of *The Camellia* is an important event in camellia literature, for this is the first illustrated work devoted to this genus to be produced in this country for over a century. Its appearance coincides with a great revival in camellia popularity, and it is assured of a welcome from all enthusiasts and lovers of fine books.

In this volume, twenty camellias are described and illustrated in colour, all being cultivars of *C. japonica* except *C. sinensis* and *C.* × *williamsii* 'J. C. Williams'. The natural size plates are well chosen, portraying both old and new varieties and showing the great diversity of floral form and the full colour range. With one exception ('Frau Minna Siedel', which is very artificial) the artists' work can scarcely be faulted, but unfortunately in some cases the colour reproduction is not of the same high standard. 'Magnoliaeflora' is too chalky, the depth of colour of 'Rubescens Major' is lost in a blurred reproduction, whilst 'Hatsu-Sakura' has too much red in it. It should have been stated that the illustration of 'J. C. Williams' shows the deeper shade which is possible under glass, for the plate is not typical of the variety as grown in the open. 'Hana-Fuki', 'Donckelarii', and 'Adolphe Audusson' are very pleasing, whilst the plate of 'Yuki-Botan' is superb.

Camellia nomenclature is very confused, but it is quite evident that a determined and a very successful effort has been made to ensure the accuracy of the text. The substitution of the names 'Grand Sultan' for 'Mathotiana' and 'Gauntletti' for 'Alba grandiflora' will raise a few eyebrows, but this is in accordance with the latest nomenclature findings and is to be commended. There is, however, no justification for the publication of the doubtful name 'Satanelia' from the scanty evidence given. The frequent references to old literature are interesting and show the value of research, for besides a full description, the origin of each variety is given as far as possible. The introduction traces the history of camellias from early Japanese references to the discovery of *C. granthamiana* in 1955.

This reasonably priced volume provides a feast of colour and information for everyone and the completed series should become a most valuable work of reference. I look forward to the next volume and trust that this venture will receive the encouragement and success which it so richly deserves.

CHARLES PUDDLE

"An Encyclopaedia of Annual and Biennial Garden Plants." By C. O. Booth. Royal 8vo. 488 pp. Illus. (Faber & Faber.) 84*s*.

This monumental work begins with some interesting observations on the true nature of annual and biennial flowering plants, followed by a few notes on the raising of annuals and biennials from seed, both in the open and under glass. Observations are also given on the nature and function of seeds, principles of germination, preparation of seed-beds and methods of sowing. A short chapter on the cultivation of annuals, both in the open and under glass follows, with lists for various purposes such as cut flowers, use in the rock-garden and so on.

Useful information is given on the control of insect and other pests, including a very full description of various dusts and sprays used for the purpose. Although it is pointed out that this class of plant in the garden is usually remarkably free from such attack, a large number of pages are devoted to a very complete description of such pests. A further long chapter is devoted to Parasitic Diseases and Nutritional Diseases, giving very full information, both of the diseases which may be encountered, together with the various fungicides and disinfectants recommended for their control. This very detailed information may be of value to large commercial growers.

Finally, the remaining three-quarters of the book is devoted to a Descriptive List of Genera and Species, listing over 1,200 species of annual and biennial flowering plants. An indication is also given of the garden varieties available under some of the species. In addition to very full descriptions, valuable hints are also given on the best methods of cultivation, both under genera and, where necessary, under particular species. At the end of the description of each genus are also noted diseases and insects which may attack such plants in the garden, with reference to their control. Throughout this section a number of illustrations are included, mainly black and white and a few in colour. Those of some of the lesser known annuals should be of value on that account.

An error may be pointed out here, which could be corrected in any further editions. Fig. 33, opposite page 257, is not *Echium vulgare*, a well-known British wild plant, but a form of *E. plantagineum*, probably the form 'Blue Bedder' referred to in the text, also under the wrong species.

Further information is given at the end of the work in the form of a Glossary of Botanical Terms; Specific names and their English equivalents, e.g. *argenteus, -a, -um* —silvery; Common names and their Latin equivalents, e.g. Flax—Linum; Chromosome Numbers, taken from Darlington and Wylie's "Chromosome Atlas"; finally, a list of "Seedsmen and Botanic Gardens Abroad" able to supply seed of the large number of plants described in the general list. These are placed under the headings of countries.

The main value of this publication is as a book of reference. It is doubtful if the average gardener in this country and indeed most of the Fellows of this Society would find it a profitable book to buy. For one thing, even with the aid of the list of "Seedsmen and Botanic Gardens Abroad", most of them would find it extremely difficult, if not impossible, to procure seeds of very many of the species described, and even should they manage to do so and raise plants from them, a large proportion would be found to be of little garden value.

A. P. BALFOUR

"The Cox's Orange Pippin." By D. Macer Wright. 119 pp. Illus. (Faber, 1957.) 15*s*.

It is a tribute to the unique qualities of the Cox's Orange Pippin that it should be thought worth while to devote a book to its cultivation. Not long ago the Cox was hardly regarded as a commercial apple, owing to its temperamental behaviour as a tree; now it is the most widely planted of all varieties in Great Britain. But Mr. Macer Wright is correct in regarding it as a variety needing rather special attention and has written a book which, concentrating though it does on this one variety, should be studied by all growers, commercial or amateur, who wish to grow apples successfully. It is written in a straightforward, lucid manner, not too technical, well produced in attractive type with ample and adequate photographs and diagrams, and only two misprints, on pp. 38 and 78, were observed.

His approach to the subject is logical, starting with the soil desirable for satisfactory growth and describing how this should be prepared or improved. He rightly stresses the importance of mulches and the value of straw for this purpose. Straw is expensive and in some places difficult to obtain, but sawdust, which he condemns, can sometimes be acquired at nominal cost and can safely be used if not dug in and adequate nitrogen used. The need of this nitrogen is indicated on p. 37, and on p. 39 a very heavy dressing is recommended, although on p. 27 it is said to be unnecessary, but the author properly insists that the tree itself must be the guide. Planting straight into an established sward is sometimes successful.

The seeding suggested on p. 33 is rather extravagant, otherwise the advice on soil management is excellent.

The warning about excessive use of potash is important, but growers must realize that when a deficiency shows up, it will take several years to correct and ½ oz. per sq. yd. (p. 45) will not suffice. Although generous applications of nitrogen may mask the symptoms of magnesium deficiency, it is not established that this deficiency can be cured in this way.

The advice in Chapter V on siting, planting and stocks is excellent, while the chapters on pruning show what some regard as a mystery, to be a rational proceeding. Pests and diseases are dealt with adequately and suitable spraying programmes recommended, while the chapter on the history of "Cox" is an interesting addition.

The essential part played by leaves in the synthesis of carbohydrates is emphasized on p. 79, but the end-products are more complex than mere carbohydrates.

Fruit-growing is not yet an exact science and opinions differ on certain points, but this book is an admirable presentation of our present knowledge.

T. NEAME

"Gardening in Rhodesia." By T. Manson. 146 pp. 3rd. Ed. (Kingston Ltd.) 6*s*. 6*d*.

This handbook will be useful for those who settle in Rhodesia and wish to garden without experience of the conditions in that country. Mr. Manson includes comprehensive lists of types and varieties of fruit, flowers, vegetables and shrubs which will succeed in Rhodesia. In addition information on sowing and planting times is given.

Amateur Gardening Handbooks: No. 19, "Rhododendrons and Azaleas", by Frederick Street; No. 24, "The Small Unheated Greenhouse", by Arthur J. Simons; No. 29. "Currants and Gooseberries", by D. S. Crowther. 92 pp. Illus. 4*s.* each.

These three additions to the series all cover their subject remarkably fully considering their size. Mr. Street writes with enthusiasm in an easy style which will encourage beginners to try at least one or two of the many species and varieties if their soil is suitable. The possibilities before a gardener with an unheated glasshouse are considerable and Mr. Simons gives some idea of what can be done with comparatively little trouble and expense. In the third book with the aid of good line-drawings the principles of propagation and pruning are clearly explained and by following these carefully good crops should result.

"Standard Garden Practice for Southern Africa." By W. G. Sheat. Illus. 379 pp. (Maskew Miller, Cape Town, 1956.) 25*s.*

With his wide experience of gardening in England and South Africa, Mr. Sheat is well equipped to write what is no less than a small encyclopaedia touching on the most important gardening subjects with the exception of fruit-growing. The book was written for amateurs in South Africa, but will, I feel, have a wider appeal in both that country and this, and many of us here will envy the gardeners in that part of the world their wide choice in plants. Each chapter on particular subjects is followed by comprehensive lists of suitable plants. The twelve pages of photographs devoted to weeds and diseases are unfortunately rather poor and might have been put to better use.

"Orchids." By Marcel Lecoufle and Henri Rose. 112 pp. Illus. (Crosby, Lockwood and Son Ltd.) 17*s.*

Science and practice have joined hands in the authorship of this handy and very brightly illustrated book. M. Marcel Lecoufle has won fame as a commercial grower and raiser of orchids at Boissy St. Leger, while Mr. Henri Rose is a botanist engaged at the Musée d'Histoire Naturelle in Paris. "Orchids" is unique in that it is the English edition of a book published simultaneously in French. The authors tell their story simply and in such a way as to encourage the cultivation of these fascinating plants by amateurs, and especially by those novices who still consider that only the rich can afford to make a hobby of orchids. The authors give comparatively short lists and descriptions of species which readily adapt themselves to cultivation and they do not elaborate the cultural details that so often confuse a potential grower. They point out that it is erroneous to suppose that orchids are difficult to grow. By very reason of the extremes of climatic conditions they suffer in their natural habitats, such as months of drought followed by monsoon-like rains, they are very resistant and tolerate bad culture more than many other plants of less fragile reputation. In fact it is said they are difficult to kill! Most growers will agree that more orchids are killed by over-watering than by any other cultural mistake. The amateur who aspires to breeding and the raising of hybrid orchids from seeds will find all necessary information to aid him in this most intriguing business.

The publishers are to be congratulated on their share in this publication. Photographs in colour and monochrome taken by M. Lecoufle are admirably reproduced. The pictures in colour of *Miltonia* 'Mokadem', *Sophronitis grandiflora*, *Odontonia* 'Molière', *Cypripedium* 'Ingres', *Dendrobium* 'Pompadour', *Odontioda* 'Aritea', *Cymbidium* 'Princesse Marie' and *Odontoglossum* 'Petit Ami' are particularly attractive and likely to further the avowed intentions of the authors to make orchids better known and loved. The production of both French and English editions has led to a few errors, notably some French captions in the English publication, but these mistakes are corrected in the text. The lists of hybrids might have been extended and it is difficult to understand why such popular hybrids as *Cattleya* 'Bow Bells' and *C.* 'Bob Betts' have been omitted. However, it is a praiseworthy book.

CHARLES H. CURTIS

ORDERS FOR BOOKS

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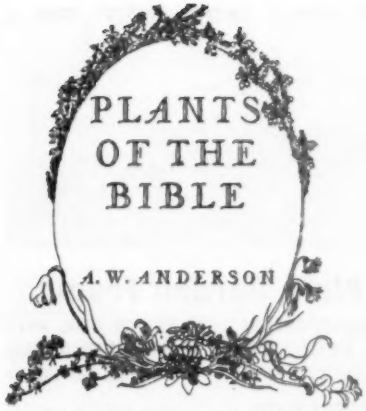

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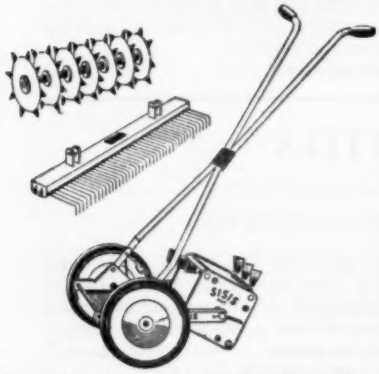

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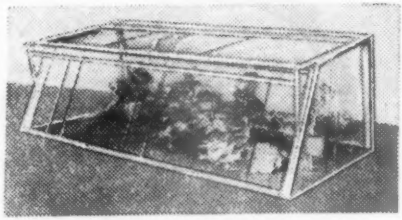

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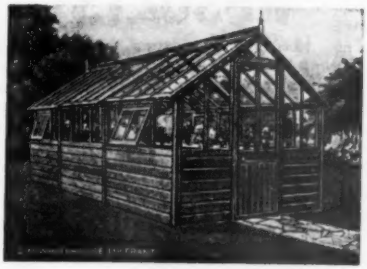

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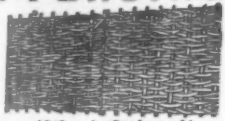

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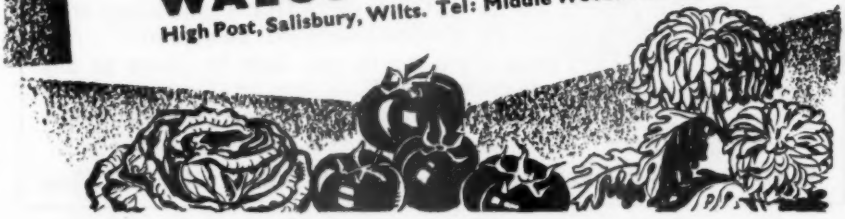

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Mr. Adams, proprietor of the Westmancote Nursery, Bredon, Worcestershire, grows 2½ acres of tomatoes under glass. He says "*White Lead paints are absolutely necessary for glasshouses*" and that in his opinion "*Ibex Greenhouse Paint is the best paint for glasshouses that has been produced.*" Mr. Adams should know; he has spent 40 years in market gardening and every year his glasshouses are painted inside and out with Ibex Greenhouse Paint. Ibex is a white lead base oil paint. It works well, spreads well and is economical. It is tough and flexible. It does not crack or flake. It seldom needs burning off for repainting. In short, Ibex for glasshouses, because

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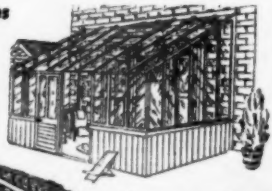

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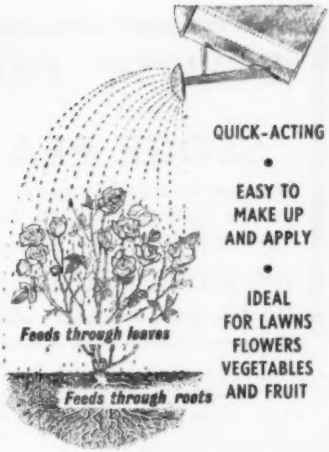

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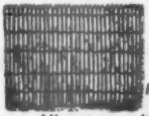

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